USER MANUAL

IP cameras

Models:

SNC-3302
SNC-3303
SNC-3305
SNC-3322
SNC-4302
SNC-4323IR
SNC-5312IR
SNC-5315IR
SNC-5323IR
SNC-6202
SNC-6212IR
SNC-6302
SNC-6312IRH
SNC-6315IRH
SNC-6323IRH
SNC-8322HO
SNC-8322I

SNC-3302, SNC-3303, SNC-3305

SNC-3322

SNC-4302

SNC-5312IR, SNC-5315IR,
SNC-5323IR

SNC-6202

SNC-6212IR

SNC-4323IR

SNC-6302

SNC-4323IR, SNC-6312IRH,
SNC-6315IRH, SNC-6323IRH

SNC-8322HO

SNC-8322I

Dear customer,

Thank you for purchasing a high quality SANTEC device.

We recommend that you read this manual thoroughly before operating your new system for the first time. Please follow all instructions and observe the warnings contained in this manual.

Please contact your local dealer or SANTEC directly if you have any questions or if you wish to claim for a service or warranty.

You will find further information on our website:
www.santec-video.com

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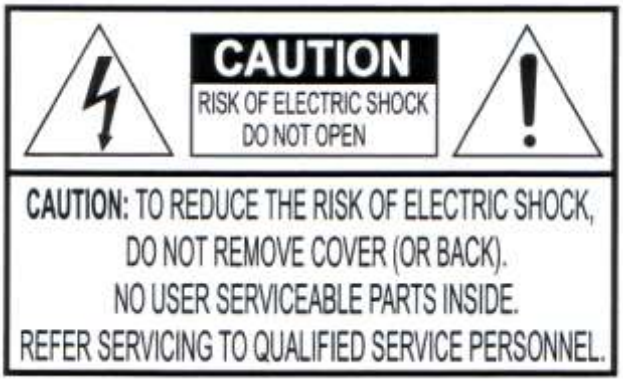
Safety precautions

Caution


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Description of symbols

Danger: This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to a person.

Warning: This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CE compliance

This appliance complies with the CE guidelines.
If you require an EC Declaration of Conformity for this device, please send a request to:
CE@santec-video.com

Attention:
Any changes or modifications to this appliance which have not been explicitly approved of by the respective regulatory authority, may lead to a prohibition of usage of this appliance.

Important: Legal note

Monitoring, recording and storage of video surveillance data (images, sound), is subject to strict legal regulations. Please respect the Data Privacy Act which applies to your country.

Safety instructions

- Before operating the appliance, please read this manual carefully and retain it for further reference.
- Before cleaning the appliance, it has to be switched off and unplugged from the power outlet. Wipe the appliance with a soft damp cloth.
  Do not use harsh cleansers or aerosols for cleaning. The type label may not be replaced.
- Do not use attachments unless recommended by the manufacturer as they may affect the functionality of the appliance and result in the risk of fire, electric shock or injury.
- Never install the appliance in areas exposed to water or other liquids.
- The appliance has to be installed in a safe and stable location according to the instructions of the manufacturer. Care should be used when moving heavy equipment. Quick stops, excessive force, and uneven surfaces may cause the appliance to fall causing serious injury to persons and damage to objects.
- Openings in the appliance, if any, are provided for ventilation to ensure reliable operation of the appliance and to protect if from overheating. These openings must not be covered or blocked. Please make sure that the appliance does not overheat.
- The appliance should only be operated from the type of power source indicated on the marking label. If you are not sure of the type of power supplied at the installation location, please contact your local dealer.
- An appliance which is powered through a polarized plug (a plug with one blade wider than the other) will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug into the outlet, try reversing the plug. Do not defeat the safety purpose of the polarized plug.
- If the appliance is powered through a grounding-type plug, the plug will only fit into a grounding-type power outlet. This is a safety feature. If your outlet does not have the grounding plug receptacle, contact your local electrician.
- Route power cords and cables in a manner to protect them from damage by being walked on or pinched by items places upon or against them.
- For protection of the appliance during a lightning storm or when it is left unattended and unused for a longer period, unplug the appliance from the wall outlet. Disconnect any antennas or cable systems that may be connected to the appliance. This will prevent damage to the appliance due to lightning or power-line surges.
- Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
- Never insert items into the openings of the appliance. They may touch parts under electric current which may cause an electric shock.
- Never pour any liquids over the appliance.
- In case of any operating interruption or a complete operating failure please switch off the appliance and disconnect it from the wall outlet. Never attempt to service or repair the appliance yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- When replacement parts are required, be sure that the service technician uses replacements parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

- Upon completion of any service or repairs to the appliance, ask the service technician to perform safety checks to verify that the appliance is in proper operating condition.
- The appliance should only be installed by qualified service personnel and has to comply with local specifications and regulations.
- Never point the camera at an object with a high degree of luminance. Bright vertical or horizontal lines can result in a distortion (outshine) of the entire image on the monitor. This artifact is not an error but a particularity of semiconductor CCDs when they are directly exposed to a powerful light source.
- If the camera is operated in locations with extremely differing light conditions, the aperture has to be adapted.
- Please respect the local legal regulations on waste if you need to dispose of discarded appliances.

This symbol means that electrical appliances need to be disposed of properly and not simply with unsorted household refuse. Please respect local regulations on waste disposal.

Important security note on built-in IR-LEDs
(for cameras SNC-4323IR, SNC-5312IR, SNC-5315IR, SNC-5323IR, SNC-6212IR, SNC-6312IRH, SNC-6315IRH, SNC-6323IRH)

This camera is equipped with built-in IR-LEDs. Please never look directly in the powered-on IR-LEDs because the very bright light might cause eye injuries.

About this user manual

This manual aims at assisting the user on how to operate camera SANTEC IP cameras.
This manual is subject to rigid quality control. However, no guarantee can be given that mistakes are not present. We reserve the right to make changes to the manual without prior notice.
Before operating the appliance, please read this manual carefully and retain it for further reference.
Verify that all appliance items are included in the delivery. Should items be missing, do not operate the appliance and contact your local dealer.
Never attempt to repair the appliance yourself. This should only be done by qualified service personnel.
Improper handling of the appliance will invalidate the warranty.

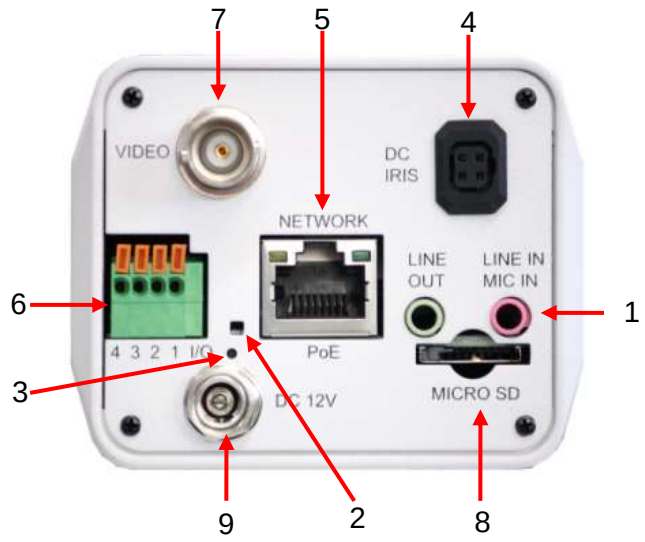
Subject to technical changes without prior notice. Errors excepted

QUICK INSTALLATION GUIDE: SNC-3302, SNC-3303, SNC-3305

To operate the IP camera, please follow these steps:

1. Install the camera in the desired location.

2. Connect the camera to power using PoE (PoE switch or PoE injector required) or 12 V DC.



No.	Connector
1	Line out & Line in/ Mic in
2	Power LED
3	Reset button
4	Auto iris connector
5	Network (PoE) and network LEDs
6	Alarm I/O
7	Video (BNC connector)
8	Micro SD card slot
9	Power supply 12 V DC

3. Insert the CD (included in the delivery) into your PC/laptop and install the IP-finder.

4. The IP-finder displays an IP address for the camera. Double-click on the IP address and the Internet Explorer comes up automatically. In case this doesn't work, you may also enter the IP address (as shown by the IP-finder) manually into the Internet Explorer. Using the IP-finder, another IP address can be assigned to the camera, if required.

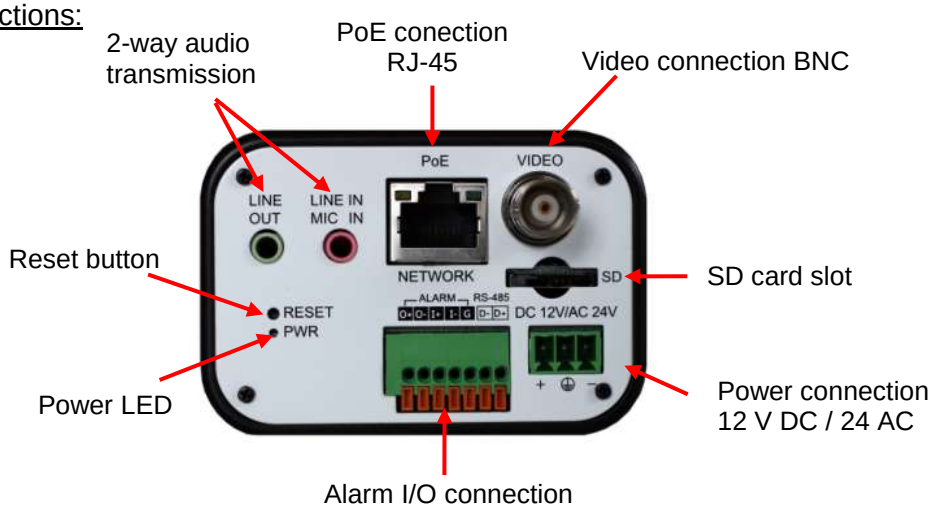
Note:
The camera comes with a default IP address:

Default IP address:	192.168.1.168 (or by DHCP, if available)
User name:	admin
Pass word:	9999

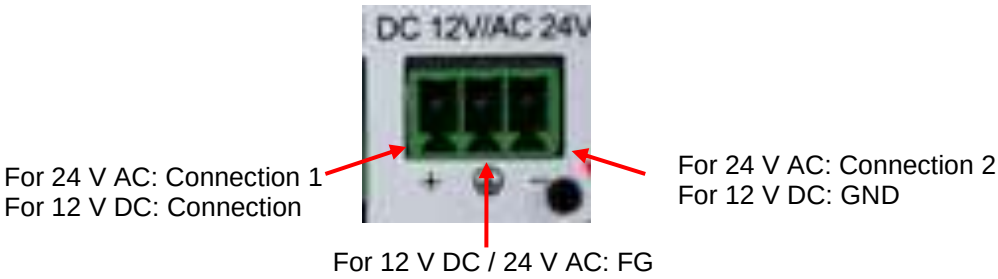
Please refer to the following chapters in this user manual for further installation information and on camera configurations.

QUICK INSTALLATION GUIDE: SNC-3322

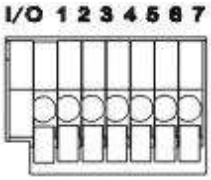
Camera connections:



Connect to power:



Alarm I/O connection:



1. Output +
2. Output -
3. Input +
4. Input –
5. GND
6. D – } RS-485
7. D + }

IP address:

1. Insert the CD (included in the delivery) into your PC/laptop and install the IP-finder.
2. The IP-finder displays an IP address for the camera. Double-click on the IP address and the Internet Explorer comes up automatically. In case this doesn't work, you may also enter the IP address (as shown by the IP-finder) manually into the Internet Explorer. Using the IP-finder, another IP address can be assigned to the camera, if required.

IP address:

The camera comes with a default IP address:

Default IP address:	192.168.1.168 (or by DHCP, if available)
User name:	admin
Pass word:	9999

Please refer to the following chapters in this user manual for further installation information and on camera configurations**.**

QUICK INSTALLATION GUIDE: SNC-4302

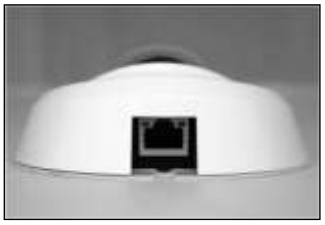
To operate the IP dome camera, please follow these steps:

1. Install the camera in the desired location.

Connector	Definition	Description
1	Reset button	Reset to factory default.
2	Lens	Turn the lens clockwise/counter-clockwise to adjust the focus.
3	Focus fixed screw	Loosen the screw to adjust the lens.
4	Tilt fixed screw	Loosen the screw to adjust the tilt angle.
5	Micro SD card slot	For video recording storage.

2. Connect the camera to power using PoE (PoE switch or PoE injector required).
   The SANTEC SNC-4302 can only be supplied with power via PoE.

3. Connect the camera to the network using a LAN cable.
   The network LED lights up in orange.



1. Prepare a PC/laptop with an Ethernet link to the network.
2. Connect the LAN port (RJ45) of the camera to a network switch/hub.
3. Check the network LED status.

4. Insert the CD (included in the delivery) into your PC/laptop and install the IP-finder.

5. The IP-finder displays an IP address for the camera. Double-click on the IP address and the Internet Explorer comes up automatically. In case this doesn't work, you may also enter the IP address (as shown by the IP-finder) manually into the Internet Explorer. Using the IP-finder, another IP address can be assigned to the camera, if required.

Note:
The camera comes with a default IP address:

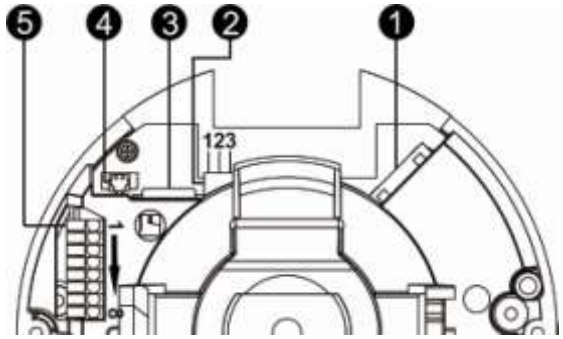
Default IP address:	192.168.1.168 (or by DHCP, if available)
User name:	admin
Pass word:	9999

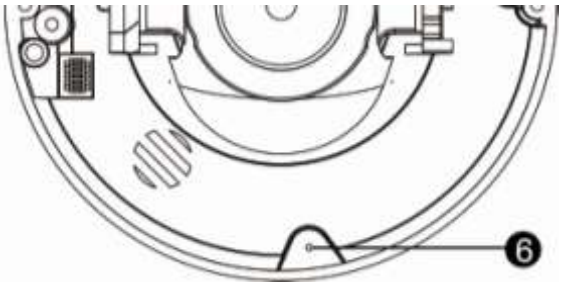
Please refer to the following chapters in this user manual for further information on camera configurations.

QUICK INSTALLATION GUIDE: SNC-4323IR

To operate the IP dome camera, please follow these steps:

1. Install the camera in the desired location.





No.	Connector	Pin	Definition	
1	RJ-45	-	10/100 Mbps Ethernet / PoE	
2	Power 24 V AC / 12 V DC	1	24 V AC: Power -1	12 V DC: Power
		2	24 V AC: GND	12 V DC: Reserved
		3	24 V AC: Power -2	12 V DC: GND
3	Micro SD card slot	-	For video recording	
4	BNC	-	Analogue video output	
5	Alarm & Audio I/O	1	Alarm In (–)	
		2	Alarm In (+)	
		3	Alarm Out (–)	
		4	Alarm Out (+)	
		5	Audio Out (L)	
		6	Audio Out (R)	
		7	GND	
		8	Audio In	
6	Reset button	-	Press the reset button (at least 20 sec.) using a pointed, thin object to reset the camera to factory default settings.	

2. Connect the camera to power using PoE (PoE switch or PoE injector required) or 12 V DC / 24 V AC.
3. Insert the CD (included in the delivery) into your PC/laptop and install the IP-finder.
4. The IP-finder displays an IP address for the camera. Double-click on the IP address and the Internet Explorer comes up automatically. In case this doesn't work, you may also enter the IP address (as shown by the IP-finder) manually into the Internet Explorer. Using the IP-finder, another IP address can be assigned to the camera, if required.

Note:
The camera comes with a default IP address:

Default IP address:	192.168.1.168 (or by DHCP, if available)
User name:	admin
Password:	9999

QUICK INSTALLATION GUIDE: SNC-5312IR, SNC-5315IR, SNC-5323IR

ATTENTION!
Please do not open the camera housing.
All connections and settings are accessible from the outside.
The camera is equipped with a motorised DC vario lens and is adjusted via the web interface (focus, zoom).
Improper handling will invalidate the warranty!

To operate the IP camera, please follow these steps:

1. Connect the power/PoE/alarm/audio cables from the ceiling or wall to the corresponding connectors of the camera. Connect the camera to power using PoE (PoE switch or PoE injector required) or 12 V DC / 24 V AC.

2. If required, open the lid on the bottom of the housing. Here you will find the additional video test connector, the reset button and the micro SD card slot.

3. In the desired installation location, mount the camera using suitable screws.

4. Use the included torx wrench to loosen the bracket screws a bit to adjust the camera into the right position. If you are satisfied with the camera position, tighten the bracket screws again.

5. Sunshield:
   Ensure to correctly install the sunshield.

6. Insert the CD (included in the delivery) into your PC/laptop and install the IP-finder.

7. The IP-finder displays an IP address for the camera. Double-click on the IP address and the Internet Explorer comes up automatically. In case this doesn't work, you may also enter the IP address (as shown by the IP-finder) manually into the Internet Explorer. Using the IP-finder, another IP address can be assigned to the camera, if required.

IP address:
The camera comes with a default IP address:

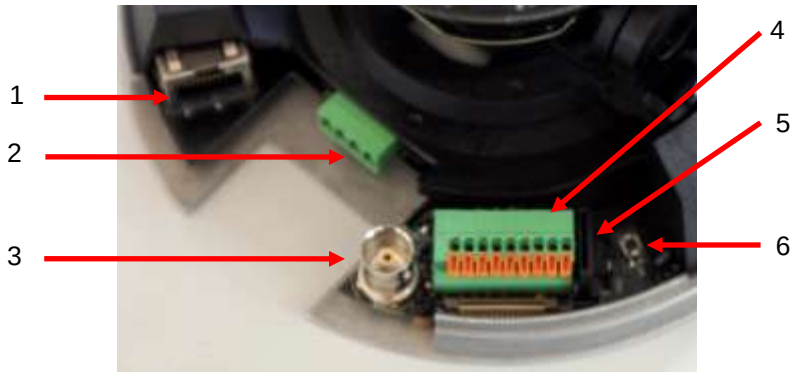
Default IP address:	192.168.1.168 (or by DHCP, if available)
User name:	admin
Pass word:	9999

Please refer to the following chapters in this user manual for further installation information and on camera configurations.

QUICK INSTALLATION GUIDE: SNC-6202 and SNC-6212IR

To operate the IP dome camera, please follow these steps:

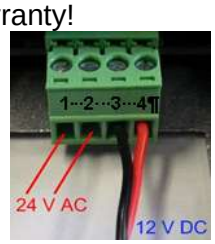
1. Install the camera in the desired location.



No.	Connector		Pin	Definition
1	RJ-45		-	10/100 Mbps Ethernet / PoE
2	Power	24 V AC	1	24 V AC
			2	24 V AC
		12 V DC	3	12 V DC (-), GND
			4	12 V DC (+)
3	BNC		-	Analogue video-output
4	Alarm & Audio I/O		1	Alarm In (–)
			2	Alarm In (+)
			3	Alarm Out (–)
			4	Alarm Out (+)
			5	Audio Out (R)
			6	Audio Out (L)
			7	Audio GND
			8	Audio In (R)
			9	Audio In (L)
5	Micro SD card slot		-	For video recording storage
6	Reset button		-	Press your finger on the reset button for approx. 15 sec. to restore the camera to factory settings.

<u>Note on power connection:</u>
When connecting power, please note that the connection pins on the 4-pin plug are separate for 12 V DC and 24 V DC.

Improper power connection may lead to camera damages and to invalidation of warranty!



2. Connect the camera to power using PoE (PoE switch or PoE injector required) or 12 V DC / 24 V AC.
3. Insert the CD (included in the delivery) into your PC/laptop and install the IP-finder.
4. The IP-finder displays an IP address for the camera. Double-click on the IP address and the Internet Explorer comes up automatically. In case this doesn't work, you may also enter the IP address (as shown by the IP-finder) manually into the Internet Explorer. Using the IP-finder, another IP address can be assigned to the camera, if required.

<u>Note:</u>
The camera comes with a default IP address:

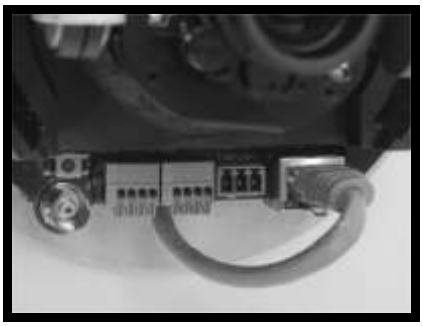
Default IP address:	192.168.1.168 (or by DHCP, if available)
User name:	admin
Pass word:	9999

Please refer to the following chapters in this user manual for further installation information and on camera configurations.

QUICK INSTALLATION GUIDE: SNC-6302, SNC-6312IRH, SNC-6315IRH, SNC-6323IRH

To operate the IP dome camera, please follow these steps:

1. Install the camera in the desired location:
   - Open the camera housing and remove the inner housing and the camera module.
   - Fix the housing plate in the desired location using the screws and anchors.
   - Put the camera module back onto the housing plate.
   - Lead the cables through the respective openings in the housing and connect them to the corresponding plugs of the camera module. Connect the camera to the network using a LAN cable (the network LED lights up in orange when a network connection is established).



   - Adjust the lens by putting it in the desired position.
   - Turn the focus and zoom adjustment rings to obtain a sharp picture while checking the picture quality in the live view of the camera's web browser.
   - Put first the inner housing and then the outer housing back on and screw it tight.

2. Connect the camera to power using PoE (PoE switch or PoE injector required) or 12 V DC / 24 V AC.

3. Insert the CD (included in the delivery) into your PC/laptop and install the IP-finder.

4. The IP-finder displays an IP address for the camera. Double-click on the IP address and the Internet Explorer comes up automatically. In case this doesn't work, you may also enter the IP address (as shown by the IP-finder) manually into the Internet Explorer. Using the IP-finder, another IP address can be assigned to the camera, if required.

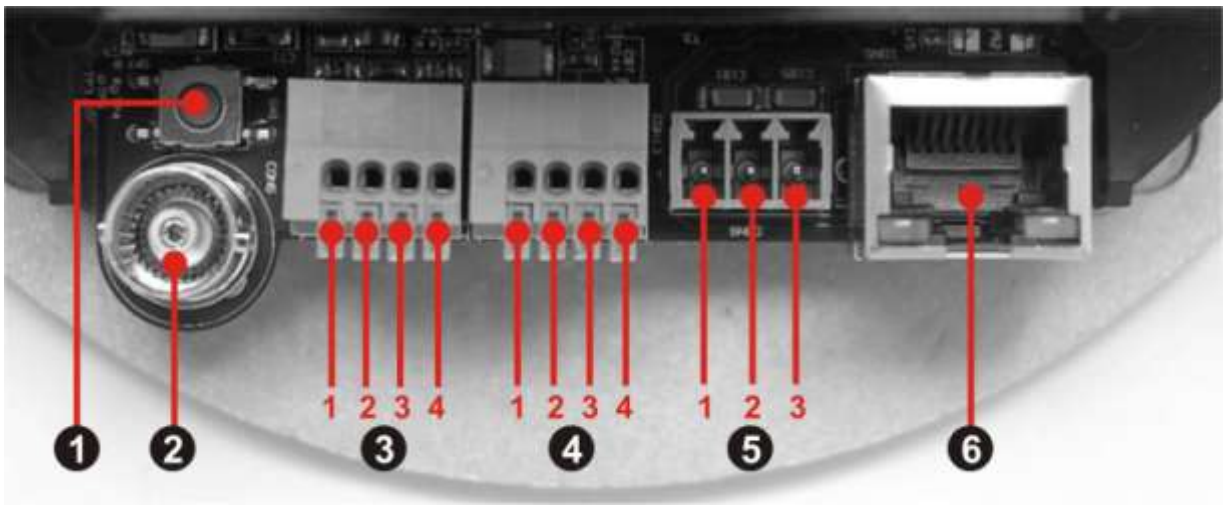
Note:
The camera comes with a default IP address:

Default IP address:	192.168.1.168 (or by DHCP, if available)
User name:	admin
Pass word:	9999

Please refer to the following chapters in this user manual for further installation information and on camera configurations.

SNC-6302, SNC-6312IRH, SNC-6315IRH, SNC-6323IRH:

Camera inside view:



No.	Connector		Pin	Definition	Remarks
1	Reset Button		-	Restore to factory default • Keep camera connected to power. • Use a pointed device to press onto the reset button and hold it for approx. 1 sec. • Release the button and wait approx. 1 sec. • Press and hold the reset button for approx. 30 sec. • The camera is now restored to factory default settings.	
2	BNC		-	Analogue video output	
3	Alarm I/O		1	GND (Input -)	Alarm connection
			2	Input +	
			3	Output -	
			4	Output +	
4	Audio I/O		1	Output (L)	Two-way audio transmission
			2	Output (R)	
			3	GND	
			4	Input	
5	Power	DC 12V	1	Power	Power connection
			2	Reserved	
			3	GND	
		AC 24V	1	Power-1	
			2	Earth GND	
			3	Power-2	
6	RJ-45		-	10/100 Mbps Ethernet / PoE	

QUICK INSTALLATION GUIDE: SNC-8322HO, SNC-8322I

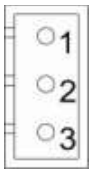
Caution:
When taking the speed dome out of the box, do not lift it by its housing top. The top is not screwed tight and may come off when taking the dome out of the box, hence the entire dome may fall down.

To operate the speed dome, please follow these steps:

1. Take off the housing top and remove the transport securing devices (adhesive tape on lens, filling material on housing top's inner side, lens cover).
2. Mount the bracket (may also serve as a drilling hole scheme) to the ceiling and lead the cables through the bracket.
3. Connect the LAN cable to the speed dome. If you don't use PoE, a power adapter with open cable ends is required plus a power plug (included in the delivery).. Note: The built-in heater of camera SNC-8322HO only operates when 24 V AC is used (and not PoE).
4. Mount the speed dome to the ceiling bracket. Turn the dome a bit until the fixing screw is in the right position and you can screw it tight to the bracket.
5. Put the housing top back and screw it tight.
6. Insert the CD (included in the delivery) into your PC/laptop and install the IP-finder.
7. The IP-finder displays an IP address for the camera. Double-click on the IP address and the Internet Explorer comes up automatically. In case this doesn't work, you may also enter the IP address (as shown by the IP-finder) manually into the Internet Explorer. Using the IP-finder, another IP address can be assigned to the camera, if required.

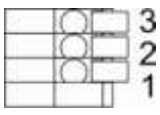
   IP address:
   The camera comes with a default IP address:
   Default IP address: 192.168.1.168 (or by DHCP, if available)
   User name: admin
   Pass word: 9999

Connect to power (24 V AC):



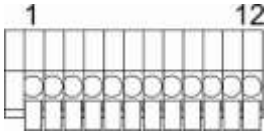
Pin	Description
1	AC 24_1
2	GND
3	AC 24_2

Connect to audio:



Pin	Description
3	LINE_IN
2	GND
1	LINE_OUT

Alarm I/O connection:



Pin	Description
1	ALARM_OUT_NO_1
2	ALARM_OUT_NC_1
3	ALARM_OUT_COM_1
4	GND
5	ALARM_OUT_NO_2
6	ALARM_OUT_NC_2

Pin	Description
7	ALARM_OUT_COM_2
8	GND
9	ALARM_IN_4
10	ALARM_IN_3
11	ALARM_IN_2
12	ALARM_IN_1

Please refer to the following chapters in this user manual for further installation information and on camera configurations**.**

Part I: Camera connections, cabling, technical specifications

1. General

1.1 Included items

All camera models:
1x IP camera
1x CD (IP finder and user manual)
1x Quick installation guide

Additionally for SNC-3302, SNC-3303 and SNC-3305:
1x Allen wrench for flange back adjustment

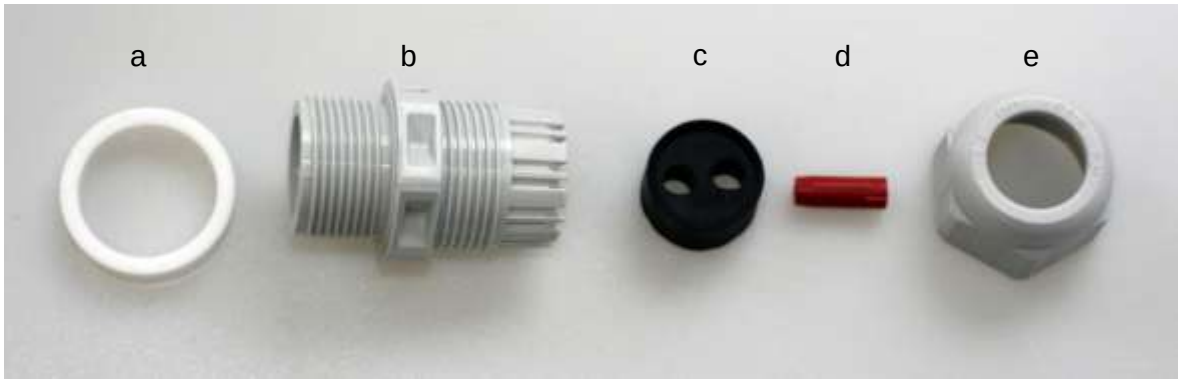
Additionally for SNC-5312IR, SNC-5315IR and SNC-5323IR:
1x Wall/ceiling bracket and sun shield
1x Cable adapter BNC socket/plug
1x Adapter power plug (open cable ends)
1x Torx wrench
4x Screws

Additionally for SNC-6202 and SNC-6212IR:
1x Power cable with terminal block (for 12 V DC / 24 V AC power)
1x Rubber gasket
2x Self-tapping screws
2x Plastic screw anchors

Additionally for SNC-4302IR, SNC-6302, SNC-6312IRH, SNC-6315IRH and SNC-6323IRH:
1x Power cable with terminal block
1x Torx wrench
4x Self-tapping screws
4x Plastic screw anchors
1x Large black washer
1x Membrane plug
2x White stickers

For outdoor installations, it is recommended to use the cable gland.

Cable gland components:
1x White washer (a)
1x Cable gland (b) with lid (e)
1x Black cable grommet (suitable for 1-2 cables) (c)
1x Red stopper (for grommet) (d)



The items included in the delivery are suitable to surface-mount the camera indoors or outdoors.
However, if you wish to mount the camera in another way, e.g. in-ceiling/flush mounting, corner mounting or pole mounting, please order the respective brackets or adaptors separately (see SANEC webshop: www.santec-video.com).

Additionally for SNC-8322I:
1x Ceiling bracket incl. 4x screws and anchors (for surface mount)

Additionally for SNC-8322HO:
1x Rubber (rain protection)
1x Lubricant

1.2 System requirements

To control the IP camera via the web browser, please ensure your PC has a good network connection and meets the system requirements as described below.

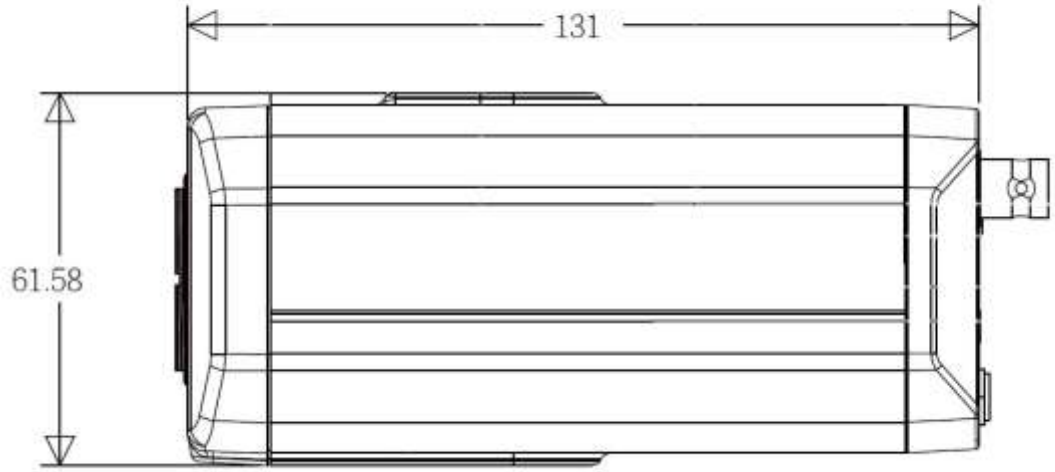
Item	System requirements
Personal Computer	1. Intel® Pentium® M, 2.16 GHz or Intel® Core™2 Duo, 2.0 GHz 2. 2 GB RAM or more
Operating System	Windows VISTA / Windows XP / Windows 7
Web browser	Microsoft Internet Explorer 6.0 or higher Firefox Chrome
Network Card	10Base-T (10 Mbps) or 100Base-TX (100 Mbps)
Viewer	ActiveX control plug-in for Microsoft Internet Explorer

1.3 Information on SANTEC Wiki

On our website **www.santec-wiki.de** have have created a knowledgebase to answer the most commonly asked questions on SANTEC products, including IP cameras.
Note: This site currently only exists in German.

1.4 Dimensions

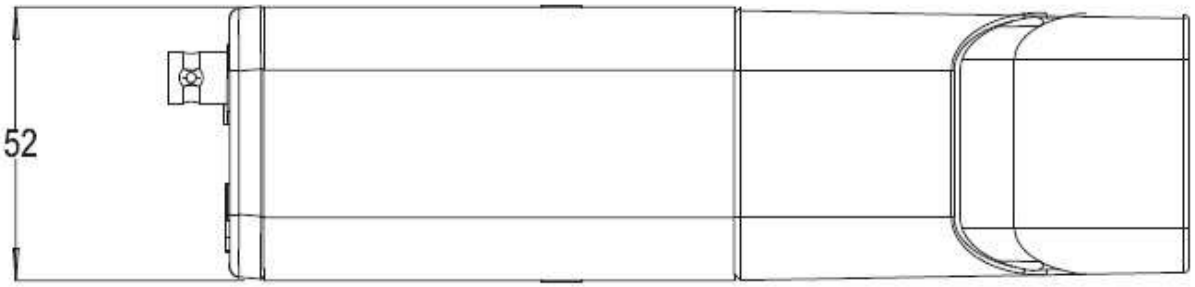
SNC-3302, SNC-3303 and SNC-3305:



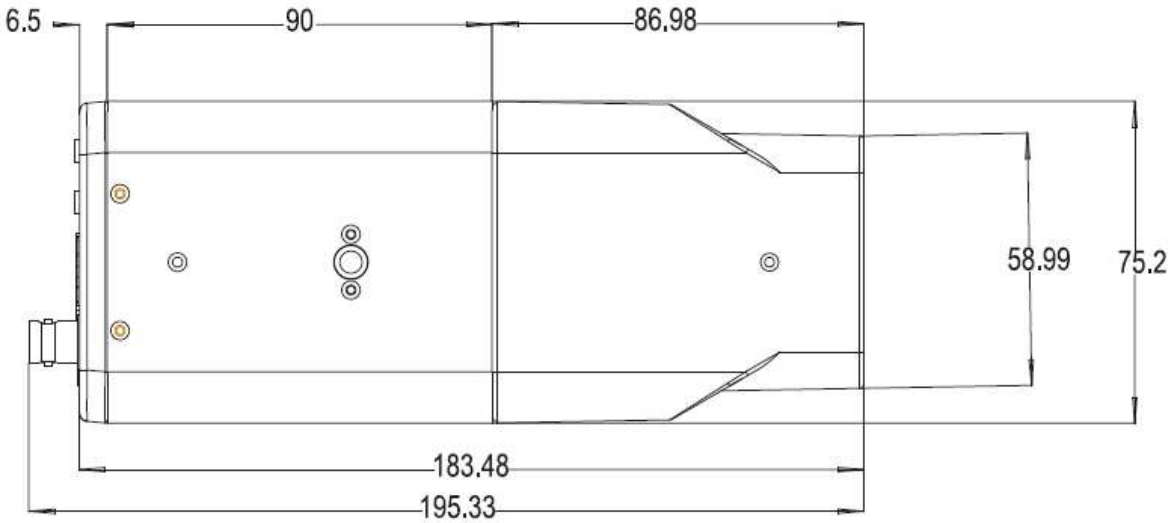
All dimensions in mm. Drawings not true to scale.
Subject to technical changes. Errors excepted.

SNC-3322:

Side view:



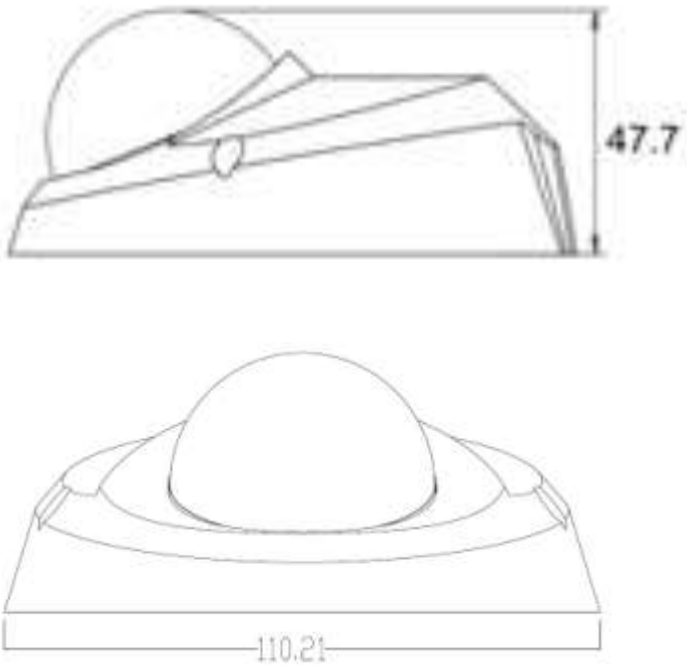
Top/bottom view:



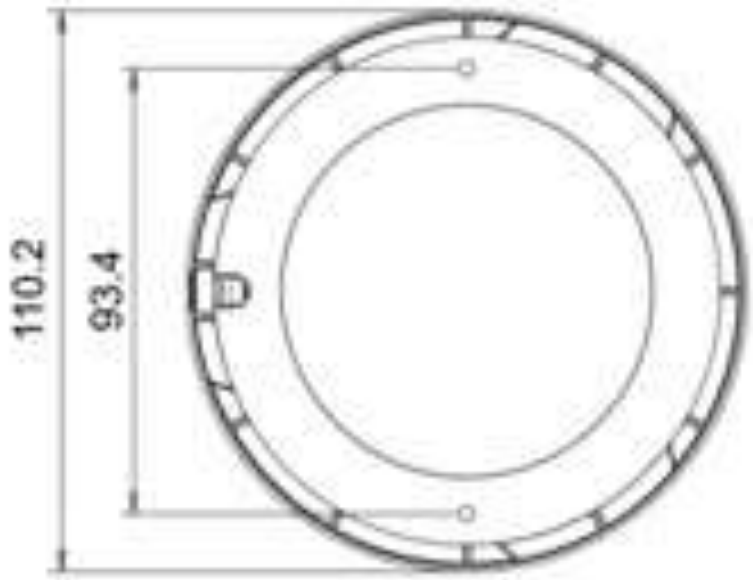
All dimensions in mm. Drawings not true to scale.
Subject to technical changes. Errors excepted.

SNC-4302:

Side view:



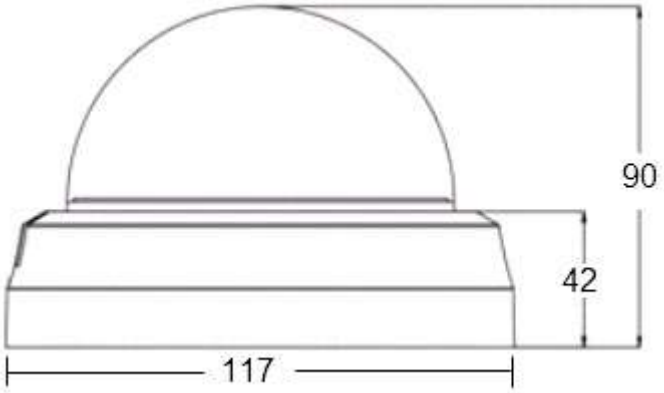
Bottom view:



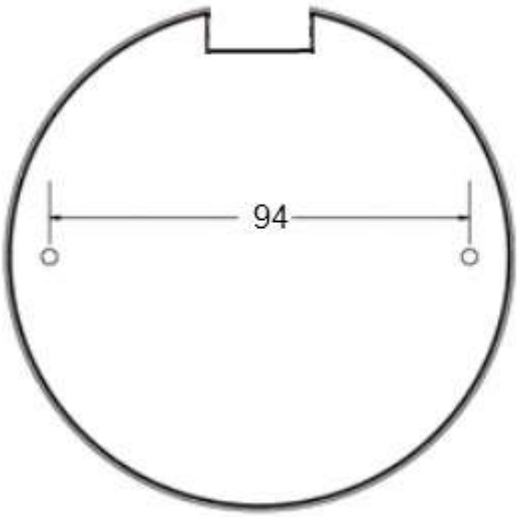
All dimensions in mm. Drawings not true to scale.
Subject to technical changes. Errors excepted.

SNC-4323IR:

Side view:



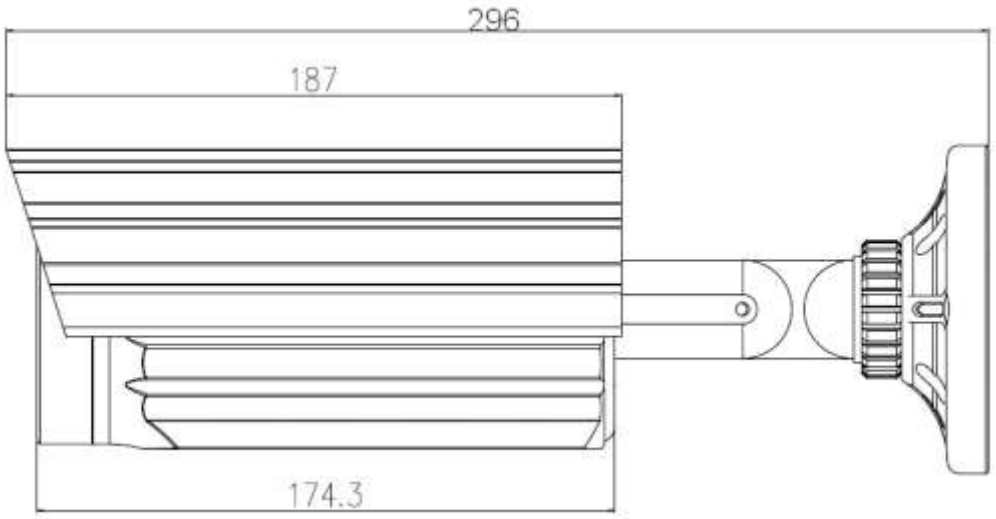
Bottom view:



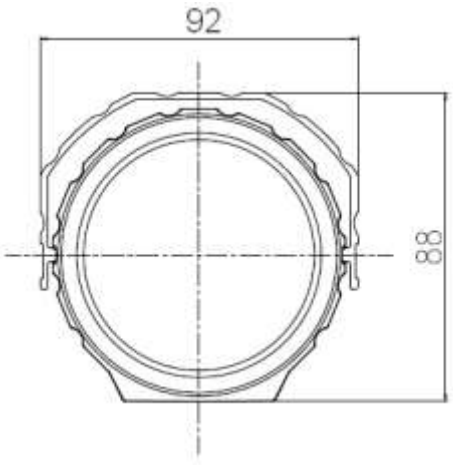
All dimensions in mm. Drawings not true to scale.
Subject to technical changes. Errors excepted.

SNC-5312IR, SNC-5315IR and SNC-5323IR:

Side view:



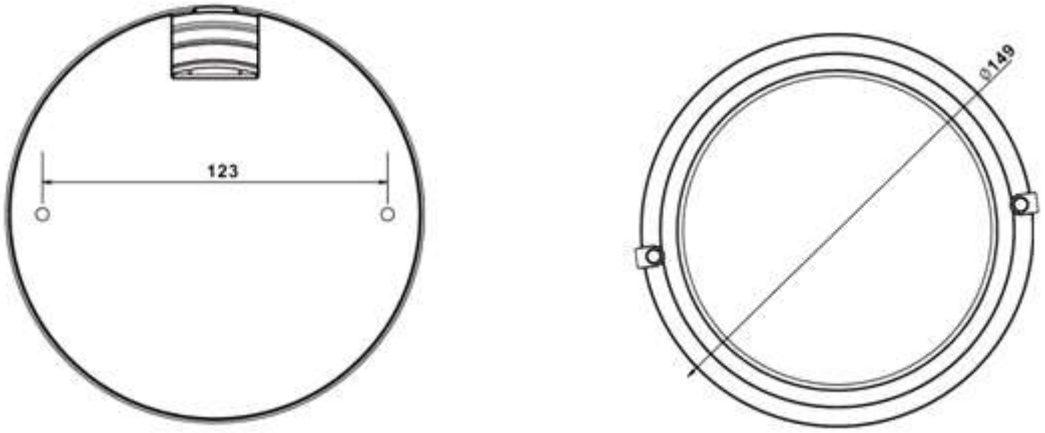
Front view:



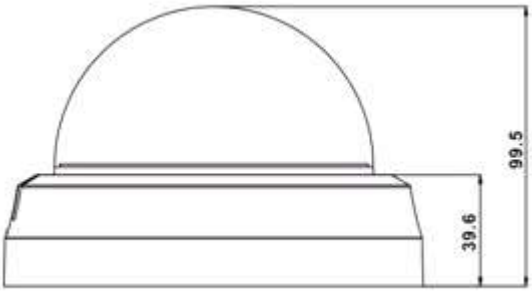
All dimensions in mm. Drawings not true to scale.
Subject to technical changes. Errors excepted.

SNC-6202 and SNC-6212IR:

Bottom view:



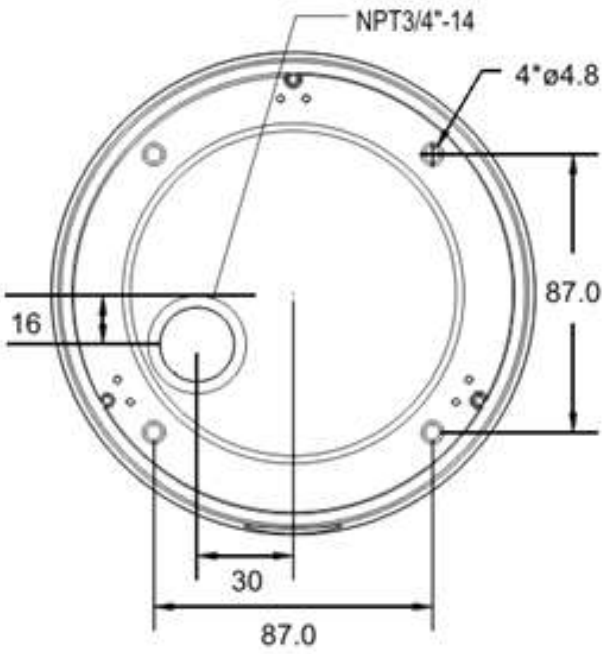
Side view:



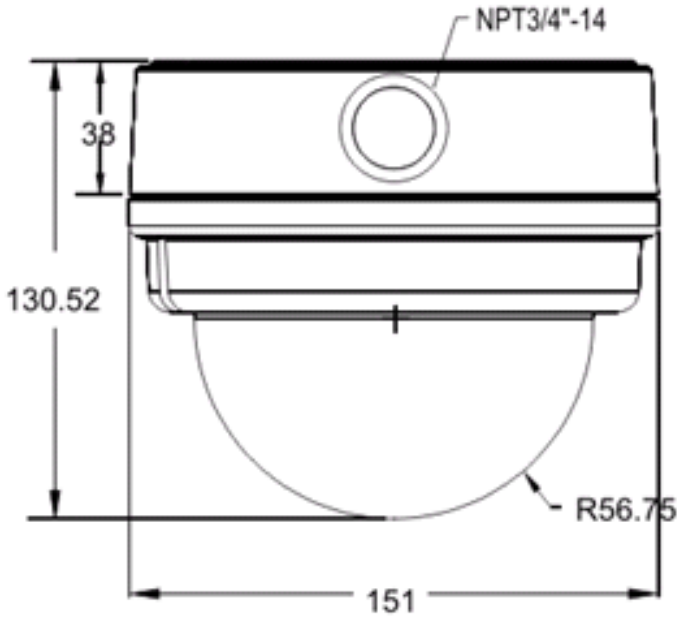
All dimensions in mm. Drawings not true to scale.
Subject to technical changes. Errors excepted.

SNC-6302, SNC-6312IRH, SNC-6315IRH and SNC-6323IRH:

Bottom view:



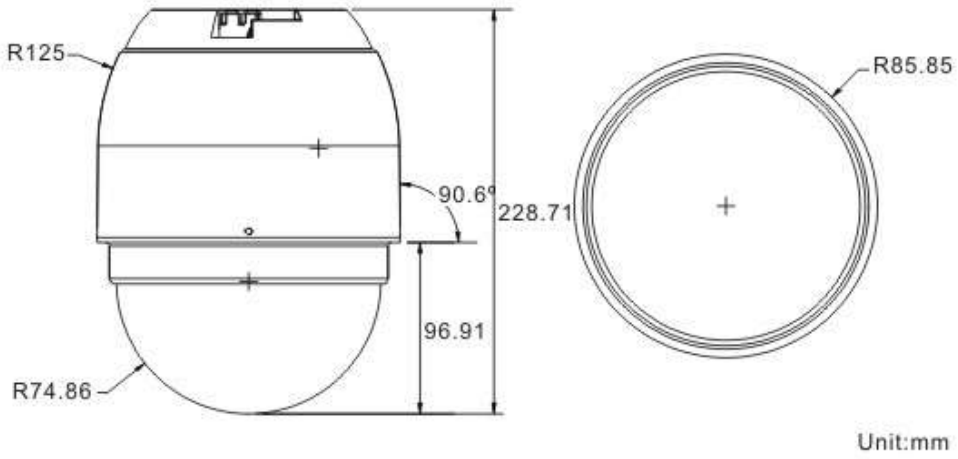
Side view:



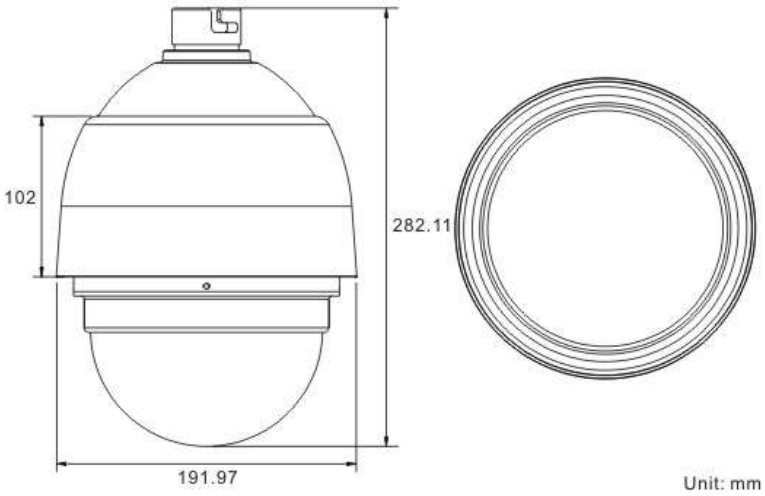
All dimensions in mm. Drawings not true to scale.
Subject to technical changes. Errors excepted.

SNC-8322I, SNC-8322HO:

SNC-8322I:



SNC-8322HO:

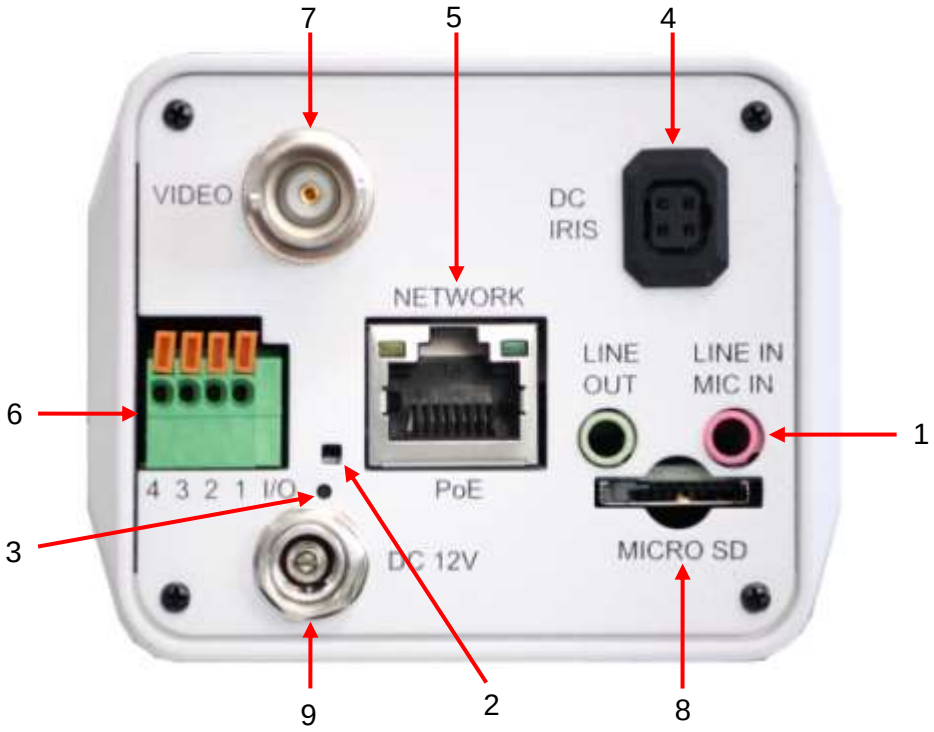


All dimensions in mm. Drawings not true to scale.
Subject to technical changes. Errors excepted.

1.5 Connections

SNC-3302, SNC-3303 and SNC-3305:

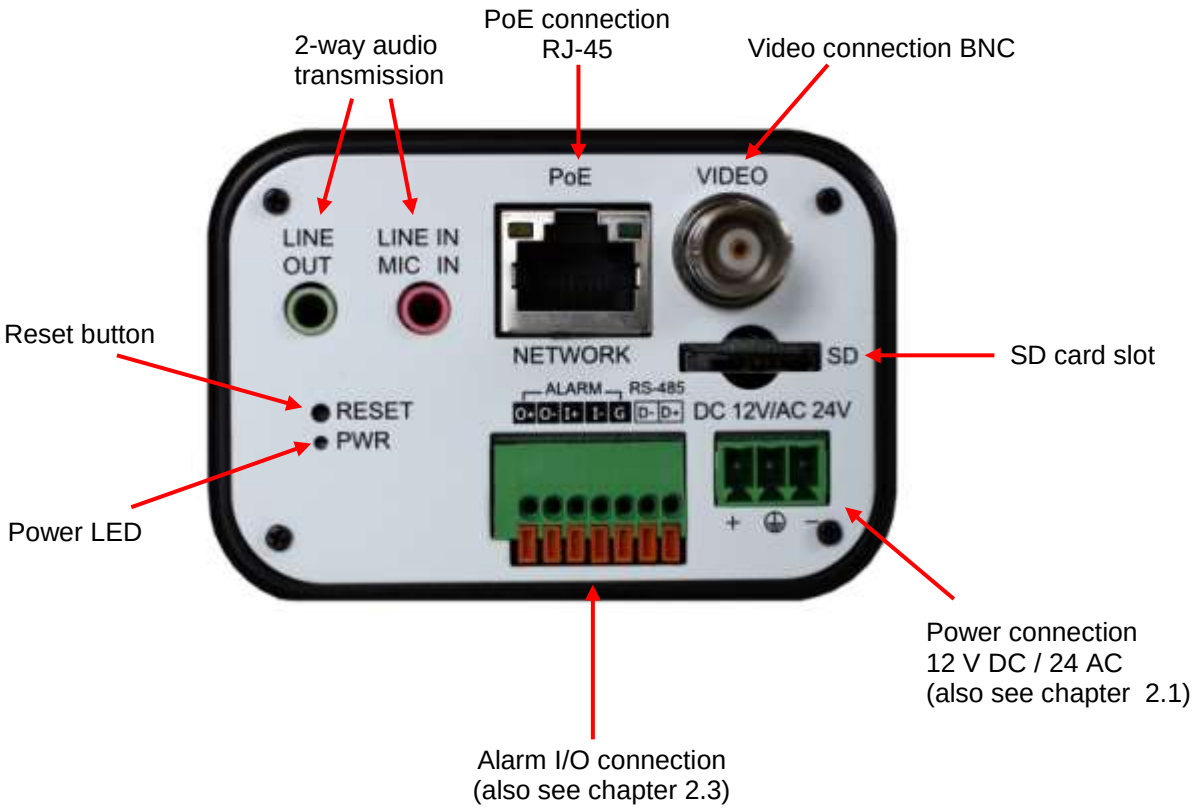
Camera rear view:



No.	Connector	Description	
1	Line out & Line in/ Mic in	Two-way audio transmission	
2	Power LED	Power connection indication (green light)	
3	Reset button	Reset to factory default settings: • Keep camera connected to power. • Use a pointed device to press onto the reset button and hold it for approx. 1 sec. • Release the button and wait approx. 1 sec. • Press and hold the reset button for approx. 30 sec. • The camera is now restored to factory default settings	
4	Auto iris connector	Auto iris lens connector	
5	Network (PoE) and network LEDs	RJ-45 connector, indicator for network connection	
6	Alarm I/O	1	Output+
		2	Output-
		3	Input+
		4	Input-
7	Video (BNC connector)	For video output	
8	Micro SD card slot	For video recording storage	
9	Power supply	12 V DC	

SNC-3322:

On the camera rear, you will find the following connections:



Reset to factory default:

- Keep camera connected to power.
- Use a pointed device to press onto the reset button and hold it for approx. 1 sec.
- Release the button and wait approx. 1 sec.
- Press and hold the reset button for approx. 30 sec.
- The camera is now restored to factory default settings

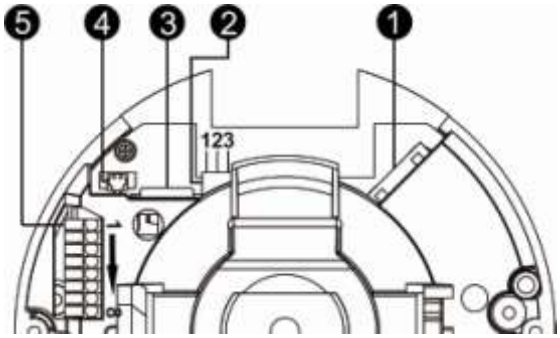
SNC-4302:

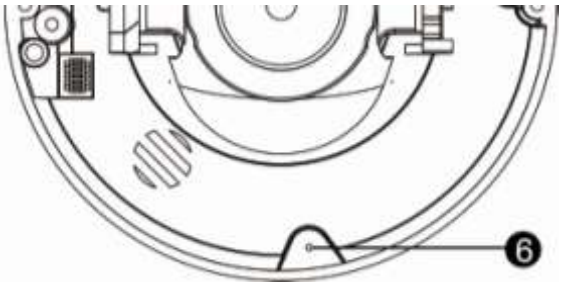
Camera inside view:

Connector	Definition	Description
1	Reset button	Reset to factory default. • Keep camera connected to power. • Use a pointed device to press onto the reset button and hold it for approx. 1 sec. • Release the button and wait approx. 1 sec. • Press and hold the reset button for approx. 30 sec. • The camera is now restored to factory default settings.
2	Lens	Turn the lens clockwise/counter-clockwise to adjust the focus.
3	Focus fixed screw	Loosen the screw to adjust the lens.
4	Tilt fixed screw	Loosen the screw to adjust the tilt angle.
5	Micro SD card slot	For video recording storage.

SNC-4323IR:

Camera inside view:

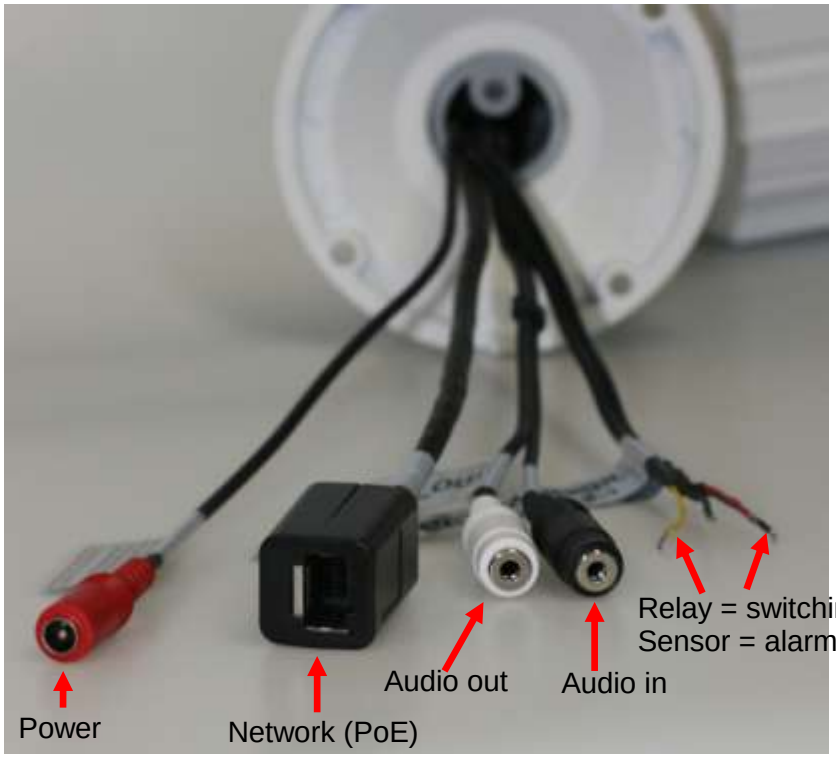




No.	Connector	Pin	Definition	
1	RJ-45	-	10/100 Mbps Ethernet / PoE	
2	Power 24 V AC / 12 V DC	1	24 V AC: Power -1	12 V DC: Power
		2	24 V AC: GND	12 V DC: Reserved
		3	24 V AC: Power -2	12 V DC: GND
3	Micro SD card slot	-	For video recording	
4	BNC	-	Analogue video output	
5	Alarm & Audio I/O	1	Alarm In (–)	
		2	Alarm In (+)	
		3	Alarm Out (–)	
		4	Alarm Out (+)	
		5	Audio Out (L)	
		6	Audio Out (R)	
		7	GND	
		8	Audio In	
6	Reset button	-	Press the reset button (at least 20 sec.) using a pointed, thin object to reset the camera to factory default settings.	

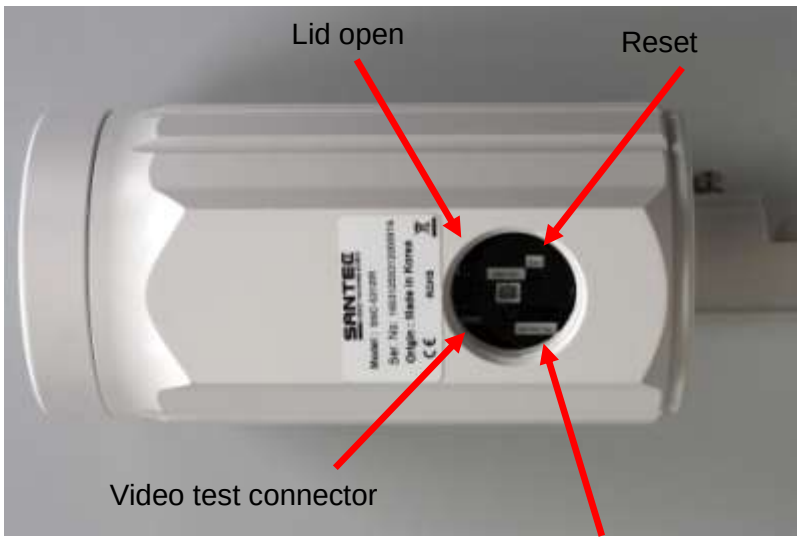
SNC-5312IR, SNC-5315IR and SNC-5323IR:

The following connectors/cables already attached to the camera:



SD card slot, reset button and video test connector

Open the lid on the camera housing's bottom and you will have access to the micro SD card slot, the reset button and the video test connector.



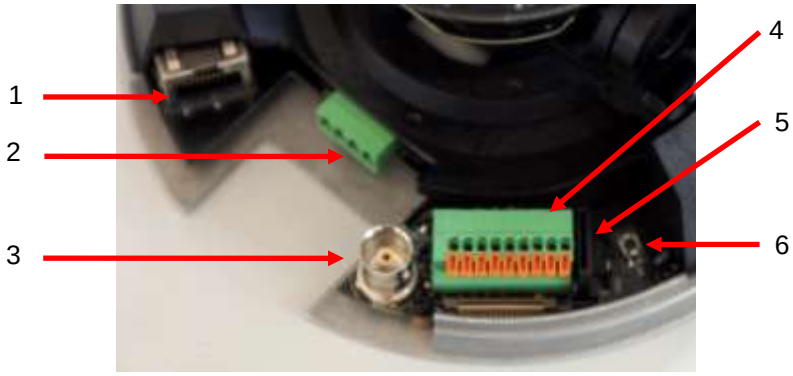
Micro SD card slot

Reset to factory default:

- Keep camera connected to power.
- Use a pointed device to press onto the reset button and hold it for approx. 1 sec.
- Release the button and wait approx. 1 sec.
- Press and hold the reset button for approx. 30 sec.
- The camera is now restored to factory default settings.

SNC-6202 and SNC-6212IR:

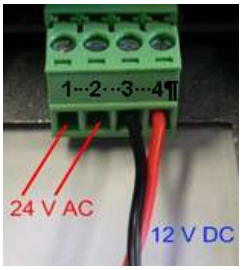
Camera inside view:



No.	Connector		Pin	Definition
1	RJ-45		-	10/100 Mbps Ethernet / PoE
2	Power	24 V AC	1	24 V AC
			2	24 V AC
		12 V DC	3	12 V DC (-), GND
			4	12 V DC (+)
3	BNC		-	Analogue video output
4	Alarm & Audio I/O		1	Alarm In (–)
			2	Alarm In (+)
			3	Alarm Out (–)
			4	Alarm Out (+)
			5	Audio Out (R)
			6	Audio Out (L)
			7	Audio GND
			8	Audio In (R)
			9	Audio In (L)
5	Micro SD card slot		-	For video recording storage
6	Reset button		-	Press your finger on the reset button for approx. 15 sec. to restore the camera to factory settings.

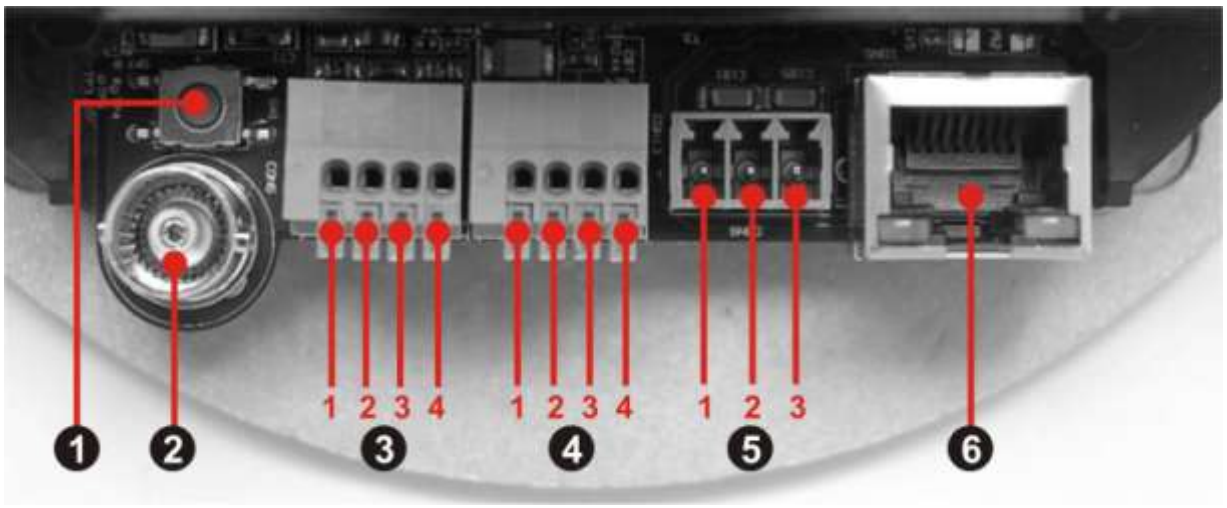
Note on power connection:
When connecting power, please note that the connection pins on the 4-pin plug are separate for 12 V DC and 24 V DC.

Improper power connection may lead to camera damages and to invalidation of warranty!



SNC-6302, SNC-6312IRH, SNC-6315IRH, SNC-6323IRH:

Camera inside view:

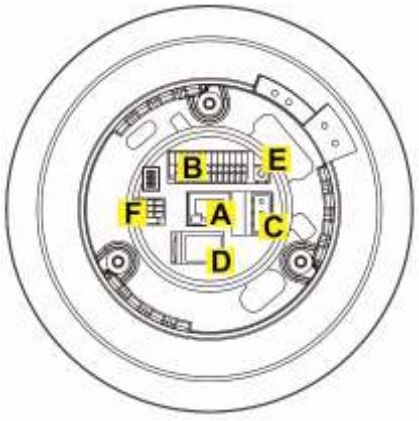


No.	Connector		Pin	Definition	Remarks
1	Reset Button		-	Restore to factory default • Keep camera connected to power. • Use a pointed device to press onto the reset button and hold it for approx. 1 sec. • Release the button and wait approx. 1 sec. • Press and hold the reset button for approx. 30 sec. • The camera is now restored to factory default settings.	
2	BNC		-	Analogue video output	
3	Alarm I/O		1	GND (Input -)	Alarm connection
			2	Input +	
			3	Output -	
			4	Output +	
4	Audio I/O		1	Output (L)	Two-way audio transmission
			2	Output (R)	
			3	GND	
			4	Input	
5	Power	DC 12V	1	Power	Power connection
			2	Reserved	
			3	GND	
		AC 24V	1	Power-1	
			2	Earth GND	
			3	Power-2	
6	RJ-45		-	10/100 Mbps Ethernet / PoE	

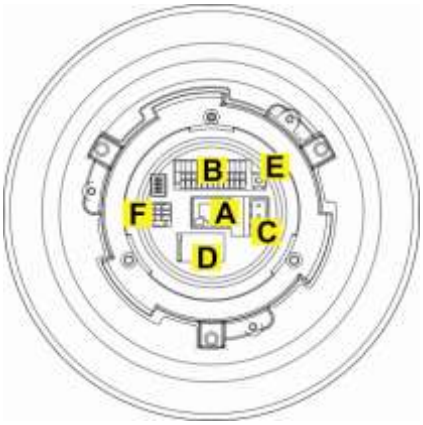
SNC-8322I, SNC-8322HO:

On the camera you will find the following connectors:

SNC-8322I:



SNC-8322HO:



A	RJ-45 connector
B	Alarm I/O
C	Power
D	Micro SD card slot
E	Reset to factory default: • Keep camera connected to power. • Use a pointed device to press onto the reset button and hold it for approx. 1 sec. • Release the button and wait approx. 1 sec. • Press and hold the reset button for approx. 30 sec. • The camera is now restored to factory default settings.
F	Audio I/O

2. Camera installation

2.1 Mounting

SNC-5312IR, SNC-5315IR and SNC-5323IR:

This camera has been designed for ceiling or wall mount. The camera comes with a pre-mounted ceiling/wall bracket with integrated cable management.

1. Connect the power/PoE/alarm/audio cables from the ceiling or wall to the corresponding connectors of the camera (also see chapter 1.5 “Connectors”, chapter 2.2 “Connect to power” and chapter 2.3 “Connect Ethernet cable”).

2. Open the lid on the bottom housing.
   a. **Video test connector:**
      This additional video test connector can be used with the supplied adapter, e.g. if you want to install a monitor during the installation phase.
   b. **Reset button:**
      Press this button if you want to reset the camera to factory default settings.
   c. **Micro SD card slot:**
      Insert a micro SD card, if required.

3. Once all adjustments are being made, close the lid thoroughly again.

4. In the desired installation location, drill four holes and mount the camera using the supplied screws. Please make sure that you choose a solid basis which is strong enough to carry the weight of the camera. If the supplied screws are not adequate for your installation purposes, please replace them by more suitable ones.

5. Use the included torx wrench to loosen the bracket screws a bit to adjust the camera into the right position. If you are satisfied with the camera position, tighten the bracket screws again.

6. **Sunshield:**
   Ensure to correctly install the sunshield. The inside front of the sunshield has a black anti-reflex foil. The sunshield has to be mounted in a way that no “bright” areas of the inside front of the camera is to be seen.

ATTENTION!
Please do not attempt to unscrew the camera housing.
All connections and settings are accessible from the outside.

The camera is equipped with a motorised DC vario lens and is adjusted via the web interface. Never try to adjust the lens manually because it will be damaged!

Improper handling will invalidate the warranty!

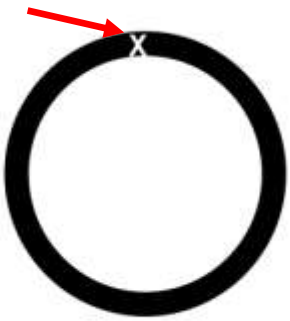
SNC-6202 and SNC-6212IR:

Please follow the steps below to surface-mount the camera indoors.

Step 1:
Loosen the 2 captive security screws with a screw driver and pull-off the dome housing.

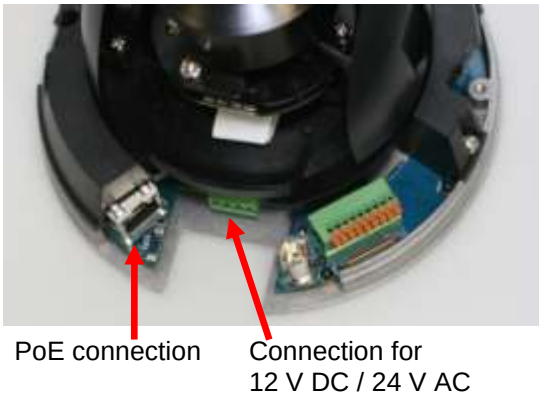
Step 2:
Press both sides of the inner cover and remove it from the camera module.

Step 3:
Stick the supplied rubber gasket onto the bottom of the camera housing.
Use a sharp knife to cut a cross-like hole into the rubber gasket at the position where the hole for the cables is located.



Step 4:
Lead the required cables through the cross-like hole in the rubber gasket and connect the camera to power:

- If using 12 V DC / 24 V AC:
  Use the supplied power cable with the terminal block.
  Connect a network cable.
- If using PoE:
  Connect the camera with a PoE network cable. A PoE switch or a PoE injector are additionally required (not included in the delivery).



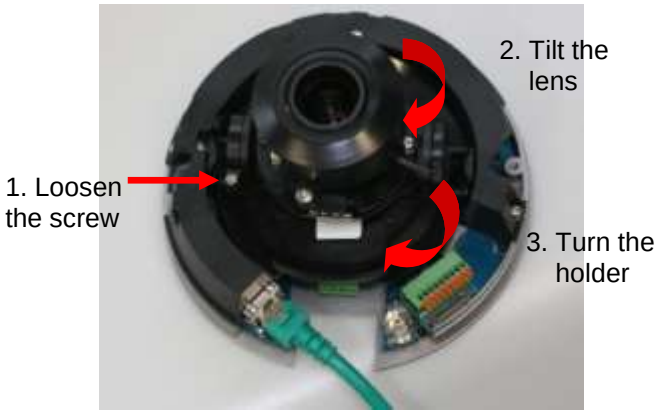
Step 5:

- Mark the positions of the two screw holes on the base plate at the chosen installation location.
- In the marked locations, drill each hole slightly smaller than the supplied screw anchors. Put the supplied anchors into these drilled holes.
- Screw the camera tight with the two supplied self-tapping screws

Step 6:
Access the camera by its web browser and display the live view (see “Part II, chapter 1 General”).

Step 7:
Adjust the camera’s pan/tilt holder to the desired angle while observing the picture quality in the web browser’s live view.

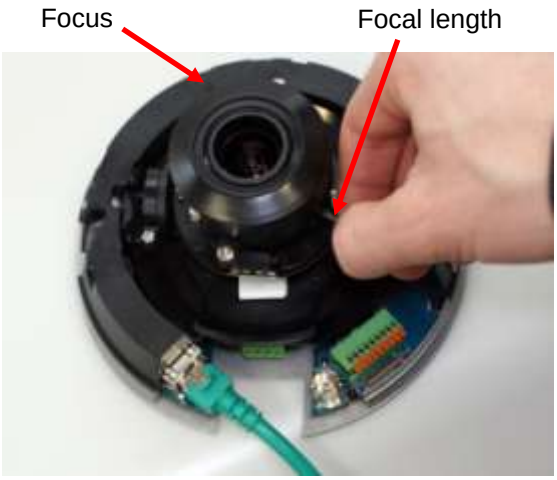
1. Use a Phillips screwdriver to loosen the screw at the pan/tilt holder.
2. Tilt the lens carefully to the desired position.
3. Turn the holder to the desired position.
4. Tighten the screw at the pan/tilt holder again.



Note:
Adjust the lens very carefully within the limits or the cables underneath might be damaged

Step 8 *(only for SNC-6202):*
To adjust the lens (focus, focal length), use the adjustment screws. Loosen these adjustment screws a bit. Move the adjustment rings to the left/right to get the best possible picture while observing the picture quality in the web browser's live view.

If you are satisfied with the adjustments, tighten the adjustment screws again.



Step 9:
Put the inner cover back to the camera module, respecting the lens position.

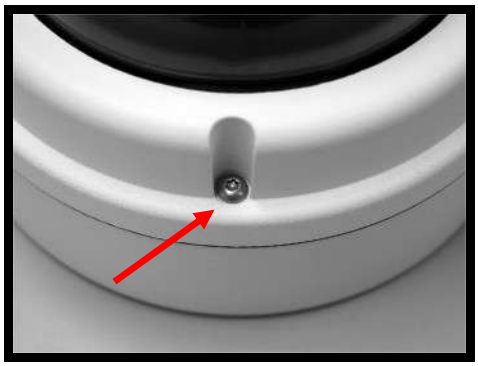
Step 10:
Put the dome cover back on.
Screw the two screws on the side of the dome cover tightly to fasten the dome cover.

The camera installation is now completed.

SNC-6302, SNC-6312IRH, SNC-6315IRH, SNC-6323IRH:

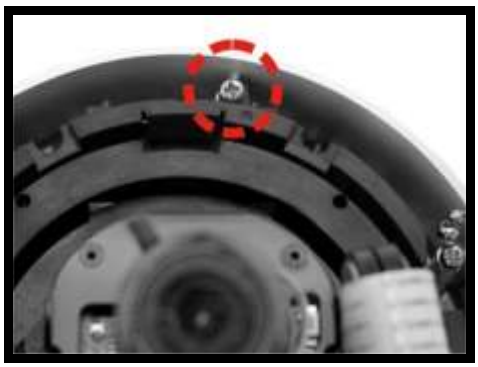
Please follow the steps below to surface-mount the camera indoors.

Step 1:
Loosen the 2 captive security screws with the supplied torx wrench and pull-off the dome housing.

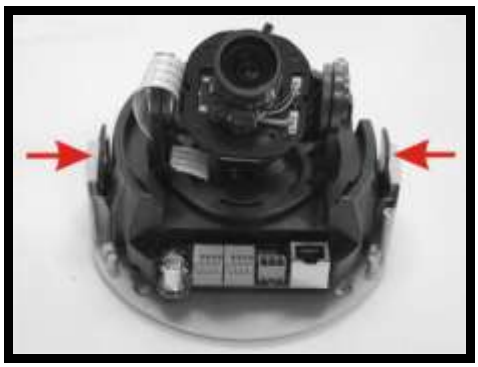


Step 2:
Press both sides of the inner cover and remove it from the camera module.

Step 3**:**
Unscrew the module-fastened screw, as indicated in the figure, with a screw driver.



Step 4:
Press the sides of the snap-on camera module, as indicated in the figure, and detach it from the dome camera's housing plate.



Step 5:
Mark the positions of the four screw holes on the base plate at the chosen installation location.

Step 6:
In the marked locations, drill each hole slightly smaller than the supplied screw anchors. Put the supplied anchors into these drilled holes.

Step 7:
For surface-mount installations, it is recommended to stick the large black washer underneath the housing plate to ensure a water-proof installation.

Step 8:
Fasten the housing plate with the four supplied self-tapping screws by piercing through the black washer.

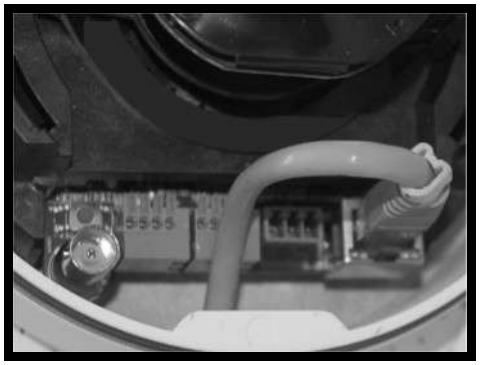
Step 9**:**
Use a coin to screw off the silver-metal conduit entry plug on the bottom of the housing plate if you wish to lead the cables through here. If this is not the case, you may want to use one of the white stickers and stick them onto the silver-metal plug to give the housing a uniform white look.

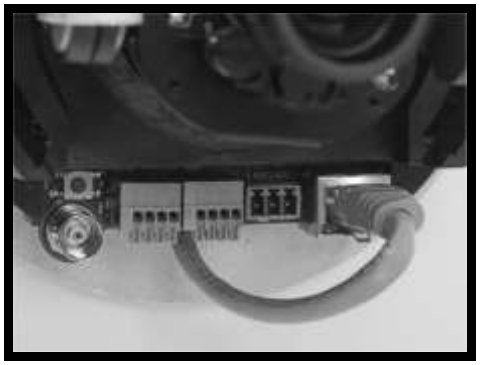
Cut a whole into the membrane plug.

Insert the membrane plug either into the side or the bottom hole of the housing base.

Thread the cables (power/Ethernet/audio/alarm) through the membrane plug.
(The power cable is omitted if using PoE.)

Step 10:
Connect the ports on the camera module with their cables/wires respectively, as shown in the figure.





Step 11:
Attach the snap-on camera module on the housing plate and screw the module-fastened screw tightly with a screw driver to secure the camera module.

Note:
The terminal blocks should face the side conduit entry, as shown in the figure.

Step 12:
Connect the power and network outputs. (The power cable is omitted if using PoE.)

Step 13:
Access the camera by its web browser and display the live view (see “Part II, chapter 1 General”).

Step 14:
Adjust the camera's pan/tilt holder to the desired angle while observing the picture quality in the web browser's live view.

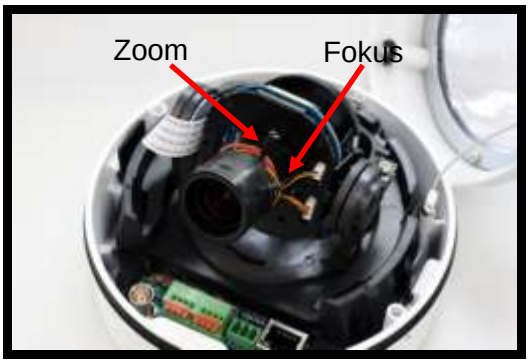
1. Use a Phillips screwdriver to loosen the screw at the pan/tilt holder.
2. Tilt the lens carefully to the desired position.
3. Turn the holder to the desired position.
4. Tighten the screw at the pan/tilt holder again.

Note:
Adjust the lens very carefully within the limits or the cables underneath might be damaged.

Step 15 *(only for SNC-6302)*
Loosen the cameras zoom/focus screws.

Move the zoom/focus adjustment rings to the left/right to get the best possible picture while observing the picture quality in the web browser's live view.

If you are satisfied with the zoom and focus adjustment, tighten the zoom/focus screws again.



Step 16:
Put the inner cover back to the camera module.

Step 17:
Put the dome cover back on.

Please align the arrow mark on the dome cover with the one on the housing as shown.

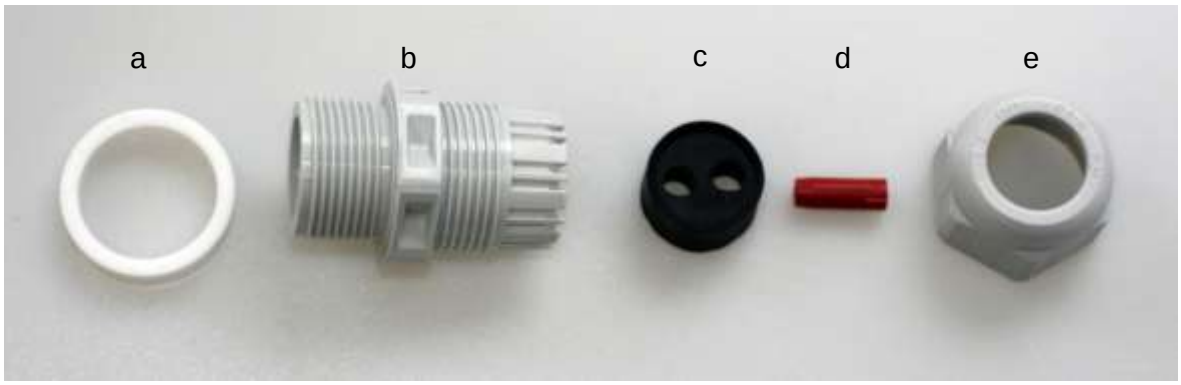
Step 18:
Screw the two torx screws on the side of the dome cover tightly to fasten the dome cover.

The camera installation is now completed.

Please prepare the camera in the following way to use it for outdoor applications:

Steps 1-8:
Identical to chapter 2.1

Step 9:
Firstly, prepare the cable gland:



- Screw-off the lid (e) from the gland (b).
- Remove the black rubber gasket from the inside of the gland. This rubber gasket is not needed anymore.
- Press the black cable grommet (c) firmly into the gland (b).

- Lead the (open-ended) cable(s) through the grommet (c).
- If you only use one cable, please close the second (not-used) cable hole in the grommet (c) with the red stopper (d).
- Fix the lid (e) onto the gland (b).
- Put the white washer (a) on the other end of the gland (b).

The cable gland is now ready for putting it into the side hole of the camera housing.
The connection between the housing and the gland is now water-proof.

Steps 10-18:
Identical to chapter 2.1

If you need to install the camera in another way than surface-mounted indoors or outdoors (see chapters 2.1 and 2.2), you may install it as follows:

- In-ceiling (flush) mounting
- Corner mounting
- Pole mounting

For these options mentioned above, special accessories such as brackets or adaptors are required which are not included in this camera shipment. Please order the respective accessories separately at our webshop at www.santec-video.com

SNC-8322I, SNC-8322HO:

Ceiling mount (surface mount with supplied bracket):

1. When taking the speed dome out of the box, do not lift it by its housing top. The top is not screwed tight and may come off when taking the dome out of the box, hence the entire dome may fall down.

2. Take off the housing top and remove the transport securing devices:
   a. adhesive tape on lens
   b. filling material on housing top's inner side
   c. lens cover

3. Drill 4 holes in the desired location on the ceiling and insert the included anchors. You may use the bracket as a drilling hole scheme. Please ensure that the ceiling is strong enough to carry the weight of the speed dome.

4. Lead the cables from the ceiling through the bracket.

5. Screw the bracket to the ceiling using the included screws. If these screws are not suitable for your installation, please use other appropriate screws.

6. Connect the cables to the speed dome. If you don't use PoE, a power adapter with open cable ends is required (not included in the delivery). Use the included power plug to connect the camera with the power adapter. Benutzen Sie den beiliegenden Stromstecker, um die Kamera mit dem Netzteil zu verbinden. Connect the LAN cable to the camera.
   Note: The built-in heater of camera SNC-8322HO only operates when 24 V AC is used (and not PoE).

7. Mount the speed dome to the ceiling bracket. Turn the dome a bit until the fixing screw is in the right position and you can screw it tight to the bracket.

8. Put the housing top back on and screw it tight

2.2 Connect to power

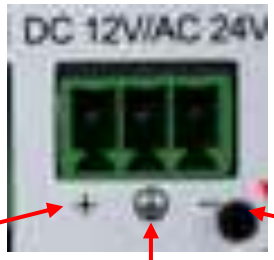
Please also see chapter “1.5 Connectors”.

Connect the Ethernet cable to the cameras PoE port and plug the other end of the cable into a PoE switch.

If using PoE, make sure Power Sourcing Equipment (PSE) is in use in the network, e.g. a hub or a router.

When using PoE, please only use a PoE + power adapter (IEEE 802.3at) which has at least the same power consumption as the camera.

SNC-3322: Connect to power:
To connect the camera to power, please use a 12 V DC / 24 V AC power adapter with open cable ends and the included power plug (also see chapter „1.5 Connectors“).

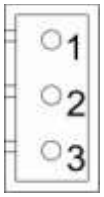


For 24 V AC: Connection 1
For 12 V DC: Connection

For 24 V AC: Connection 2
For 12 V DC: GND

For 24 V AC: FG
For 12 V DC: FG
Do not put any voltage to the middle pin.

Only for SNC-8322I, SNC-8322HO:
To connect the camera to power, please use a 24 V AC power adapter with open cable ends and the included power plug (also see chapter „1.5 Connectors“).



Pin	Description
1	AC 24_1
2	GND
3	AC 24_2

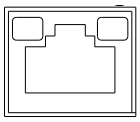
Only for SNC-8322HO: Built-in heater:
Camera SNC-8322HO is equipped with a built-in heater.
Please note that the heater only works if the camera is powered by 24 V AC.
The heater doesn’t operate if PoE is used.

2.3 Connect Ethernet cable

The use of a CAT5 Ethernet cable is recommended for network connections. To have the best transmission quality, cable length shall not exceed 100 m. Connect one end of the Ethernet cable to the RJ-45 connector of the IP camera and the other end of the cable to the network switch or PC.

Note:
In some cases you may need to use an Ethernet crossover cable when connecting the IP camera directly to the PC.

Check the status of the link indicator and activity indicator LEDs. If the LEDs are unlit, please check the LAN connection.



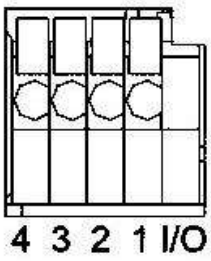
Green: Indicates good network connection.
Orange: Light flashes for network activity indication.

2.4 Alarm, audio and I/O connection
(not for SNC-4302, SNC-5312IR, SNC-5315IR, SNC-5323IR)

The camera is equipped with one alarm input relay and one alarm output relay.

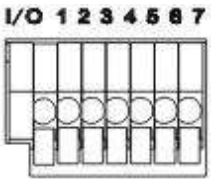
SNC-3302, SNC-3303 and SNC-3305: Pins for external circuit:

12 V DC/ PoE:



Pin 1: Output +
Pin 2: Output -
Pin 3: Input +
Pin 4: Input -

SNC-3322: Pins for external circuit:

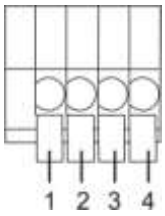


1. Output +
2. Output -
3. Input +
4. Input –
5. GND
6. D – } RS-485
7. D + }

SNC-6202 and SNC-6212IR: Pins for external circuit:

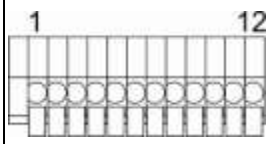
Pin	Description
1	Alarm In (–)
2	Alarm In (+)
3	Alarm Out (–)
4	Alarm Out (+)
5	Audio Out (R)
6	Audio Out (L)
7	Audio GND
8	Audio In (R)
9	Audio In (L)

SNC-6302, SNC-6312IRH, SNC-6315IRH, SNC-6323IRH: Pins for external circuit:



PIN 1: GND (Input -)
PIN 2: Input +
PIN 3: Output -
PIN 4: Output +

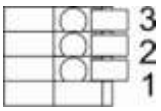
SNC-8322I, SNC-8322HO: Pins for external circuit: Alarm I/O connections:



Pin	Description
1	ALARM_OUT_NO_1
2	ALARM_OUT_NC_1
3	ALARM_OUT_COM_1
4	GND
5	ALARM_OUT_NO_2
6	ALARM_OUT_NC_2

Pin	Description
7	ALARM_OUT_COM_2
8	GND
9	ALARM_IN_4
10	ALARM_IN_3
11	ALARM_IN_2
12	ALARM_IN_1

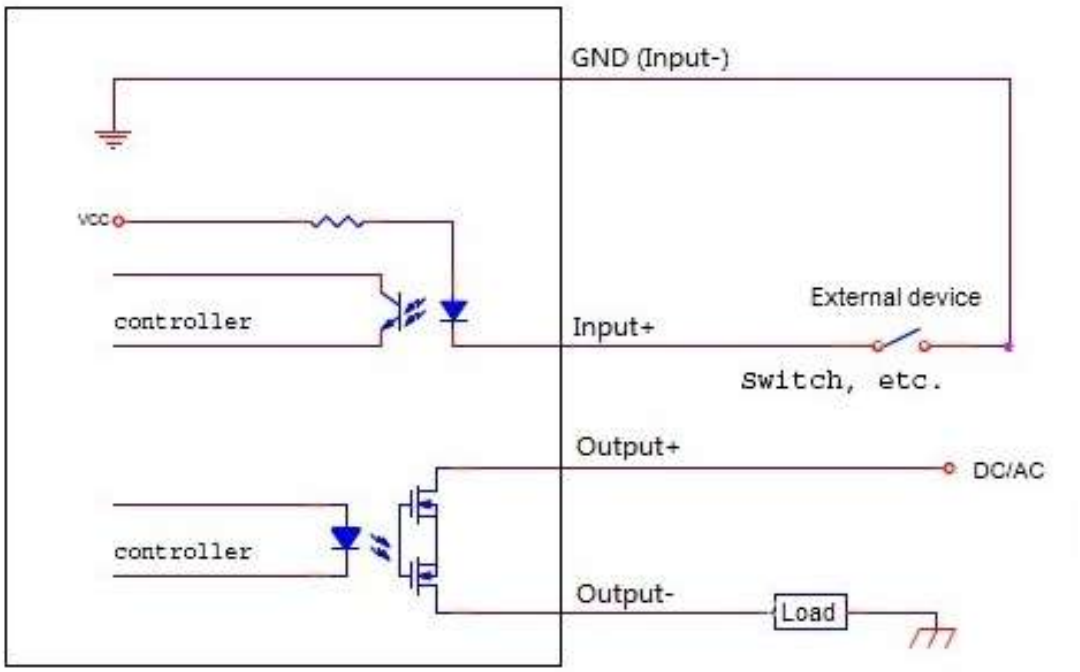
SNC-8322I, SNC-8322HO: Pins for external circuit: Audio connections:



Pin	Description
3	LINE_IN
2	GND
1	LINE_OUT

I/O diagram *(valid for all models except SNC-8322I and SNC-8322HO):*

Camera internally: External I/O connection:

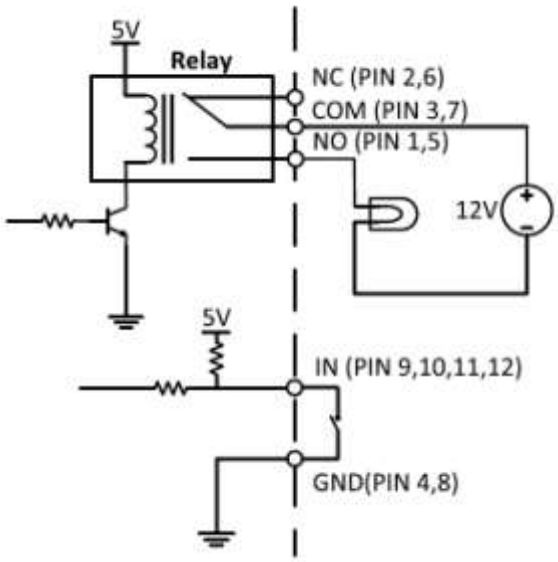


Contact load (max. connected load):

- Voltage: 350 V AC
- Current: 130 mA
- Input port: 5 V, 0.1 A

I/O diagram *(only for SNC-8322I and SNC-8322HO):*

Camera internally: External I/O connection:



3. Software installations

3.1 Access the camera: Install SanWebAX software

For initial access to the IP camera, the client program “SanWebAX” will automatically be installed on your PC when connecting to the IP camera.

If the web browser doesn’t allow SanWebAX installation, please check the Internet security settings or ActiveX controls and plug-in settings (also see chapter “Appendix: Internet security setup”) to continue the process.

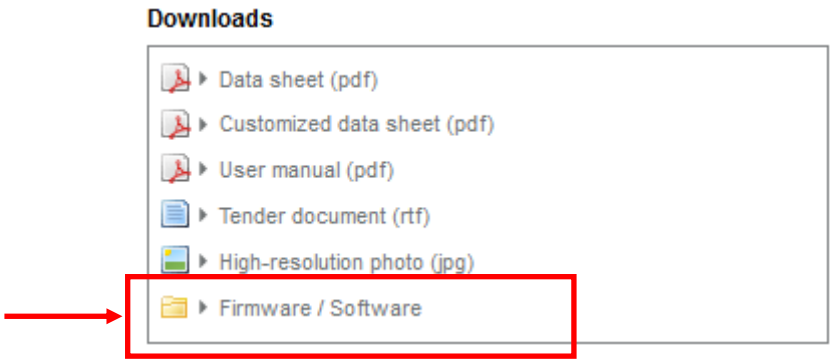
The information bar (just below the URL bar) may come out and ask for permission to install the ActiveX Control for displaying video in browser. Right-click on the information bar and select <Install ActiveX Control…> to allow the installation.

3.2 Firmware update

The firmware is a software which is installed on the IP camera and which controls all its functions. Having made the latest firmware update, the newest functions are ready to be used.

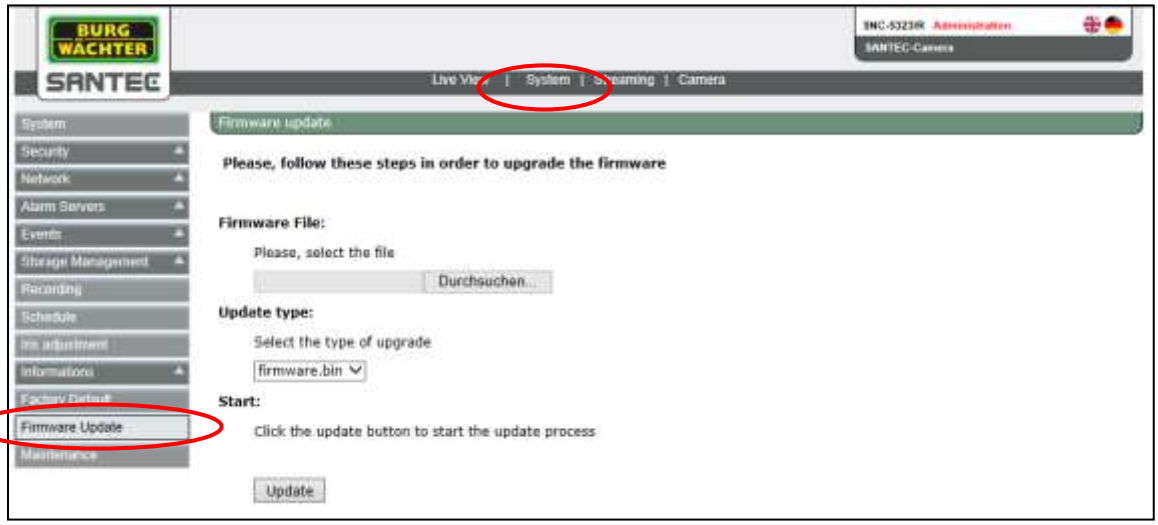
On our website, we post the most up-to-date firmware version for this camera. Therefore we recommend to always update the camera with the latest firmware version. You will find the firmware here:

www.santec-video.com ➜ Products & Shop ➜ Camera part number ➜ Downloads ➜ Firmware/Software



It is easy and fast to install the latest firmware version on your SANTEC IP camera.

1. Call-up the web interface of the SANTEC IP camera.
2. In the menu bar, click on "System" and then select „Firmware Update“.
3. Follow the instructions on this page to update the firmware.



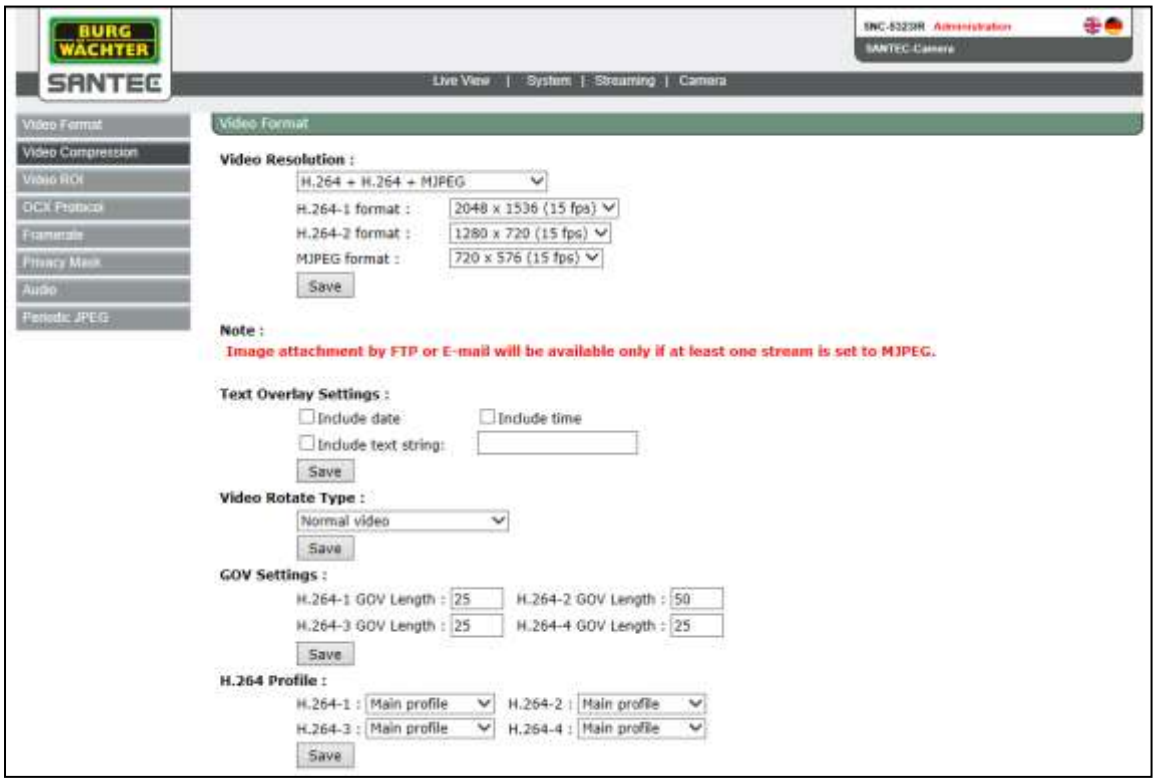
4. As a next step, the new firmware is installed on your camera. This process may take a few moments. As soon as the upgrade process has been completed, the camera automatically reboots.
5. Finally, we recommend to restore the camera to factory default settings. Click on the menu item “Factory default”.

4. Video resolution setup

4.1 Define settings

Users can setup the video resolution on the video format page using the user-friendly browser-based configuration interface.

The video format can be found under this path: **Streaming > Video Format**



Click on <Save> to confirm the settings.

Further explanations on the video format can be found in chapter “2.4.1 Video format”.

4.2 Video formats

In the video resolution section, select your preferred resolution. The available video resolution for MJPEG and H.264 format includes the following:

2 MP real time / 5MP quad streams:

<table>
<tr><th>H.264-1</th><th>H.264-2</th><th>H.264-3</th><th>H.264-4 / MJPEG</th></tr>
<tr><td rowspan="9">2592 x 1944 (12 fps)</td><td rowspan="4">720 x 480 (12 fps)</td><td>720 x 480 (12 fps)</td><td>352 x 240 (12 fps)</td></tr>
<tr><td rowspan="2">640 x 480 (12 fps)</td><td>640 x 480 (12 fps)</td></tr>
<tr><td>352 x 240 (12 fps)</td></tr>
<tr><td>352 x 240 (12 fps)</td><td>352 x 240 (12 fps)</td></tr>
<tr><td rowspan="5">640 x 480 (12 fps)</td><td rowspan="3">640 x 480 (12 fps)</td><td>640 x 480 (12 fps)</td></tr>
<tr><td>352 x 240 (12 fps)</td></tr>
<tr><td>352 x 240 (12 fps)</td><td>352 x 240 (12 fps)</td></tr>
<tr><td rowspan="27">2048 x 1536 (15 fps)</td><td rowspan="5">1280 x 720 (15 fps)</td><td rowspan="3">720 x 480 (15 fps)</td><td>640 x 480 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td></tr>
<tr><td rowspan="3">640 x 480 (15 fps)</td><td>640 x 480 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td><td>352 x 240 (15 fps)</td></tr>
<tr><td rowspan="9">800 x 600 (15 fps)</td><td rowspan="3">800 x 600 (15 fps)</td><td>720 x 480 (15 fps)</td></tr>
<tr><td>640 x 480 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td></tr>
<tr><td rowspan="3">720 x 480 (15 fps)</td><td>720 x 480 (15 fps)</td></tr>
<tr><td>640 x 480 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td></tr>
<tr><td rowspan="3">640 x 480 (15 fps)</td><td>640 x 480 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td><td>352 x 240 (15 fps)</td></tr>
<tr><td rowspan="9">720 x 480 (15 fps)</td><td rowspan="3">720 x 480 (15 fps)</td><td>720 x 480 (15 fps)</td></tr>
<tr><td>640 x 480 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td></tr>
<tr><td rowspan="3">640 x 480 (15 fps)</td><td>640 x 480 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td><td>352 x 240 (15 fps)</td></tr>
<tr><td rowspan="3">640 x 480 (15 fps)</td><td rowspan="2">640 x 480 (15 fps)</td><td>640 x 480 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td><td>352 x 240 (15 fps)</td></tr>
<tr><td>352 x 240 (15 fps)</td><td>352 x 240 (15 fps)</td><td>352 x 240 (15 fps)</td></tr>
</table>

* For 5 MP models only.

H.264-1	H.264-2	H.264-3	H.264-4 / MJPEG
1920 x 1080 (15 fps)	1280 x 1024 (15 fps)	1280 x 720 (15 fps)	720 x 480 (15 fps)
			640 x 480 (15 fps)
			352 x 240 (30 fps)
		800 x 600 (15 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		800 x 600 (30 fps)	352 x 240 (30 fps)
		720 x 480 (15 fps)	720 x 480 (30 fps)
		720 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	1280 x 720 (15 fps)	1280 x 720 (15 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
	1280 x 720 (30 fps)	720 x 480 (30 fps)	352 x 240 (30 fps)
		640 x 480 (30 fps)	352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	1024 x 768 (15 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
	1024 x 768 (30 fps)	800 x 600 (30 fps)	352 x 240 (30 fps)
		720 x 480 (30 fps)	352 x 240 (30 fps)
		640 x 480 (30 fps)	352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
1920 x 1080 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)

H.264-1	H.264-2	H.264-3	H.264-4 / MJPEG
1280 x 1024 (15 fps)	1280 x 1024 (15 fps)	1280 x 720 (15 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		1280 x 720 (30 fps)	352 x 240 (30 fps)
		800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
	1280 x 1024 (30 fps)	720 x 480 (30 fps)	352 x 240 (30 fps)
		640 x 480 (30 fps)	352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	1280 x 720 (15 fps)	1280 x 720 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
	1280 x 720 (30 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	1024 x 768 (30 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
1280 x 1024 (30 fps)	1024 x 768 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)	352 x 240 (30 fps)
		720 x 480 (30 fps)	352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)
1280 x 720 (15 fps)	1280 x 720 (15 fps)	1280 x 720 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
	1280 x 720 (30 fps)	1280 x 720 (30 fps)	352 x 240 (30 fps)
		800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
	1024 x 768 (30 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)

H.264-1	H.264-2	H.264-3	H.264-4 / MJPEG
1280 x 720 (30 fps)	1280 x 720 (30 fps)	800 x 600 (30 fps)	352 x 240 (30 fps)
		720 x 480 (30 fps)	352 x 240 (30 fps)
		640 x 480 (30 fps)	352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	1024 x 768 (30 fps)	800 x 600 (30 fps)	352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)
1024 x 768 (30 fps)	1024 x 768 (30 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)

H.264-1	H.264-2	H.264-3	H.264-4 / MJPEG
800 x 600 (30 fps)	800 x 600 (30 fps)	800 x 600 (30 fps)	352 x 240 (30 fps)
		720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)
720 x 480 (30 fps)	720 x 480 (30 fps)	720 x 480 (30 fps)	720 x 480 (30 fps)
			640 x 480 (30 fps)
			352 x 240 (30 fps)
		640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)
640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)
			352 x 240 (30 fps)
		352 x 240 (30 fps)	352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)
352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)

2 MP real time / 5 MP triple streams:

H.264-1	H.264-2	H.264-3 / MJPEG
2592 x 1944 (12 fps)	720 x 480 (12 fps)	720 x 480 (12 fps)
		640 x 480 (12 fps)
		352 x 240 (12 fps)
	640 x 480 (12 fps)	640 x 480 (12 fps)
		352 x 240 (12 fps)
2048 x 1536 (15 fps)	1280 x 720 (15 fps)	720 x 480 (15 fps)
		640 x 480 (15 fps)
		352 x 240 (15 fps)
	800 x 600 (15 fps)	800 x 600 (15 fps)
		720 x 480 (15 fps)
		640 x 480 (15 fps)
		352 x 240 (15 fps)
	720 x 480 (15 fps)	720 x 480 (15 fps)
		640 x 480 (15 fps)
		352 x 240 (15 fps)
	640 x 480 (15 fps)	640 x 480 (15 fps)
		352 x 240 (15 fps)
	352 x 240 (15 fps)	352 x 240 (15 fps)

* For 5 MP models only.

H.264-1	H.264-2	H.264-3 / MJPEG
1920 x 1080 (15 fps)	1280 x 1024 (15 fps)	1280 x 720 (15 fps)
		800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	1280 x 720 (15 fps)	1280 x 720 (30 fps)
		800 x 600 (30 fps)
	1280 x 720 (30 fps)	720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	1024 x 768 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)
		352 x 240 (30 fps)
1920 x 1080 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)

H.264-1	H.264-2	H.264-3 / MJPEG
1280 x 1024 (15 fps)	1280 x 1024 (15 fps)	1280 x 720 (30 fps)
		800 x 600 (30 fps)
	1280 x 1024 (30 fps)	720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	1280 x 720 (15 fps)	1280 x 720 (30 fps)
	1280 x 720 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
	1024 x 768 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
1280 x 1024 (30 fps)	1280 x 720 (30 fps)	352 x 240 (30 fps)
	1024 x 768 (30 fps)	640 x 480 (30 fps)
		352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)
		352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)
1280 x 720 (15 fps)	1280 x 720 (30 fps)	1280 x 720 (30 fps)
1280 x 720 (30 fps)	1280 x 720 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	1024 x 768 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)
		352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)
1024 x 768 (30 fps)	1024 x 768 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	800 x 600 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)
		352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)

H.264-1	H.264-2	H.264-3 / MJPEG
800 x 600 (30 fps)	800 x 600 (30 fps)	800 x 600 (30 fps)
		720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	720 x 480 (30 fps)	720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)
		352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)
720 x 480 (30 fps)	720 x 480 (30 fps)	720 x 480 (30 fps)
		640 x 480 (30 fps)
		352 x 240 (30 fps)
	640 x 480 (30 fps)	640 x 480 (30 fps)
		352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)
640 x 480 (30 fps)	640 x 480 (30 fps)	640 x 480 (30 fps)
		352 x 240 (30 fps)
	352 x 240 (30 fps)	352 x 240 (30 fps)
352 x 240 (30 fps)	352 x 240 (30 fps)	352 x 240 (30 fps)

2 MP real time / 5 MP dual streams:

H.264-1	H.264-2 / MJPEG	BNC support
2592 x 1944 (12 fps)	720 x 480 (12 fps)	-
	640 x 480 (12 fps)	-
	352 x 240 (12 fps)	-
2048 x 1536 (15 fps)	1280 x 720 (15 fps)	-
	800 x 600 (15 fps)	-
	720 x 480 (15 fps)	-
	640 x 480 (15 fps)	-
	352 x 240 (15 fps)	-

* For 5 MP models only.

H.264-1	H.264-2 / MJPEG	BNC support
1920 x 1080 (15 fps)	1920 x 1080 (15 fps)	√
	1280 x 1024 (30 fps)	-
	1280 x 720 (30 fps)	-
	1024 x 768 (30 fps)	-
	800 x 600 (30 fps)	-
1920 x 1080 (30 fps)	720 x 480 (30 fps)	√
	640 x 480 (30 fps)	√
	352 x 240 (30 fps)	√
1280 x 1024 (30 fps)	1280 x 1024 (15 fps)	√
	1280 x 720 (30 fps)	-
	1024 x 768 (30 fps)	-
	800 x 600 (30 fps)	-
	720 x 480 (30 fps)	√
	640 x 480 (30 fps)	√
	352 x 240 (30 fps)	√
1280 x 720 (30 fps)	1280 x 720 (30 fps)	√
	1024 x 768 (30 fps)	-
	800 x 600 (30 fps)	-
	720 x 480 (30 fps)	√
	640 x 480 (30 fps)	√
	352 x 240 (30 fps)	√
1024 x 768 (30 fps)	1024 x 768 (30 fps)	√
	800 x 600 (30 fps)	-
	720 x 480 (30 fps)	√
	640 x 480 (30 fps)	√
	352 x 240 (30 fps)	√
800 x 600 (30 fps)	800 x 600 (30 fps)	√
	720 x 480 (30 fps)	√
	640 x 480 (30 fps)	√
	352 x 240 (30 fps)	√
720 x 480 (30 fps)	720 x 480 (30 fps)	√
	640 x 480 (30 fps)	√
	352 x 240 (30 fps)	√
640 x 480 (30 fps)	640 x 480 (30 fps)	√
	352 x 240 (30 fps)	√
352 x 240 (30 fps)	352 x 240 (30 fps)	-

2 MP real time / 5 MP single stream:

H.264 only	BNC support
2592 x 1944 (12 fps)*	-
2048 x 1536 (15 fps)*	-
1920 x 1080 (30 fps) low latency**	-
1920 x 1080 (30 fps)	√
1280 x 1024 (30 fps)	√
1280 x 720 (30 fps)	√
1024 x 768 (30 fps)	√
800 x 600 (30 fps)	√
720 x 480 (30 fps)	√
640 x 480 (30 fps)	√
352 x 240 (30 fps)	-

* For 5 MP models only.
** 1920 x 1080 (30 fps): Low latency does not support BNC, 3DNR, motion detection and digital zoom.

MJPEG only	BNC support
1920 x 1080 (30 fps)	√
1280 x 1024 (30 fps)	√
1280 x 720 (30 fps)	√
1024 x 768 (30 fps)	√
800 x 600 (30 fps)	√
720 x 480 (30 fps)	√
640 x 480 (30 fps)	√
352 x 240 (30 fps)	-

5. Technical specifications: SNC-3302, SNC-3303, SNC-3305, SNC-3322

Camera	SNC-3302	SNC-3303	SNC-3305	SNC-3322
Camera type	Full HD IP day/night box camera			2 MP Full HD IP motor zoom box camera (day/night)
	2 MP	3 MP	5 MP	2 MP
Sensor type	1/2.7" Progressive Scan CMOS	1/2.8" Progressive Scan CMOS	1/2.5" Progressive Scan CMOS	Progressive Scan CMOS
Resolution (pixel)	Max. 2 MP (1920 x 1080)	Max. 3 MP (2048 x 1536)	5MP(2592x1944); max. 2 MP at MJPEG	Max. 2 MP (1920 x 1080)
Video codec	H.264 / MJPEG			
Max. frame rate	25 fps at 2 MP (1920 x 1080)	15 fps at 3 MP 25 fps at 2 MP	12 fps at 5 MP 15 fps at 3 MP 25 fps at 2 MP	25 fps at 2 MP (1920 x 1080)
Number of video streams	4			
Lens mount	C/CS			Internal
Iris control	DC			
Lens type	Lens not included in delivery			Integrated 18x motor zoom lens
Focal length	-/-			4.7 – 84.6 mm
Angle of view (horizontal)	-/-			61° - 4°
Sensitivity	0.2 (colour) / 0.02 (black/white)			
IR cut filter	Mechanical			
Day/night mode adjustment	Auto, colour, black/white			
Automatic Gain Control (AGC)	Yes			
Digital Noise Reduction (DNR)	3DNR, SPQ			
Shutter speed	1-1/10000 sec.			
White balance	AWB, ATW, manual			
Backlight compensation	BLC			
Wide Dynamic Range (WDR)	4 levels, digital			
Digital zoom	Yes			
Mirroring (vertical)	Yes			
Motion detection	Yes			
Privacy zones	Yes, 5 zones			
Tampering alarm	Yes			
Camera title	Yes			
Video output	BNC, 75 Ohm, 1 Vpp			
Audio support	Yes, 2-way			
Audio input/output	1 / 1 (3.5 mm phone jack)			
Audio codec	G.711 / G.726			
Alarm contacts I/O	1 / 1			

(continue on next page)

Camera	SNC-3302, SNC-3303, SNC-3305	SNC-3322
RS-485 interface	No	Yes
Alarm management	HTTP, FTP, SMTP	
Schedule	Yes	
Management software support	NUUO, Genetec and others	
Security features	HTTPS, IP Filter, IEEE 802.1X	HTTPS, IP Filter, IEEE 802.1X
Supported protocols	UPnP, Bonjour, DHCP, FTP, HTTP, SMTP, RTSP	
Supported software standards	ONVIF	
Internal memory	Micro SD card (optional)	
Video Content Analytics (VCA)	No	
Ethernet connector	RJ-45	
Ethernet standards	10Base-T / 100Base-TX	
Classification	IP-44	
Vandal-proof	No	
Heater & fan	No	
Camera mounting	Screw fastening	
Housing colour	White	
Housing material	Aluminium	
Integrated IR LEDs	No	
Voltage	12 V DC, PoE	PoE, 12 V DC, 24 V AC
PoE standard	IEEE 802.3af	
Power consumption	4 watt	8 watt
Operting temperature	-10° to +50° C	0° to +40° C
Storage temperature	-20° to +60° C	-10° to +50° C
Relative humidity	10-90% non-condensing	
Dimensions (D x H)	72 x 58 x 129 mm	80 x 52 x 184 mm
Weight	Approx. 320 g	Approx. 500 g
Certification	CE, RoHS	
Items included in the delivery	Quick installation guide, CD (IP-Finder, user manual), back focus adjuster	Quick installation guide, CD (IP-Finder, user manual),
Supported languages	German, English	

Subject to technical changes without notice. Errors excepted.

5. Technical specifications: SNC-4302, SNC-4323IR

Camera	SNC-4302	SNC-4323IR
Camera type	Full HD IP day/night mini dome camera	Full HD IP day/night IR dome camera
	2 MP	3 MP
Sensor type	1/2,7” Progressive Scan CMOS sensor	1/2.8” Progressive Scan CMOS Sensor
Resolution (pixel)	Max. 2 MP (1920 x 1080)	Max. 3 MP (2048x1536)
Video codec	H.264 / MJPEG	
Max. frame rate	25 fps at 2 MP (1920 x 1080)	15 fps bei 3 MP 25 fps bei 2 MP
Number of video streams	4	
Lens mount	Internal	
Iris control	DC	
Lens type	Fix lens	3x auto focus lens
Focal length	4 mm / F1.5	3 - 9 mm / F1.2
Angle of view (horizontal)	78°	29-83° at 3 MP 27-79° at 2 MP
Sensitivity	0.1 (colour)	0.2 (colour) / 0.02 (black/white)/ 0.0 (IR-LED)
IR cut filter	Electronical	Mechanical
Day/night mode adjustment	No	Auto, colour, black/white
Automatic Gain Control (AGC)	Yes	
Digital Noise Reduction (DNR)	3DNR, SPQ	
Shutter speed	1 – 1/10000 sec.	
White balance	AWB, ATW, manual	
Backlight compensation	BLC	
Wide Dynamic Range (WDR)	4 levels, digital	
Digital zoom	Yes	
Mirroring (vertical)	Yes	
Motion detection	Yes	
Privacy zones	Yes, 5 zones	
Tampering alarm	Yes	
Camera title	Yes	
Video output	No	BNC, 75 Ohm, 1 Vpp
Audio support	Yes, 2-way	
Audio input/output	1 / 0 (3.5 mm phone jack)	1 / 1 (3.5 mm phone jack)
Audio codec	G.711 / G.726	
Alarm contacts I/O	0 / 0	1 / 1

(continue on next page)

Camera	SNC-4302	SNCSNC-4323IR
RS-485 interface	No	
Alarm management	HTTP, FTP, SMTP	
Schedule	Yes	
Management software support	NUUO, Genetec and others	
Security features	HTTPS, IP Filter, IEEE 802.1X	
Supported protocols	UPnP, Bonjour, DHCP, FTP, HTTP, SMTP, RTSP	
Supported software standards	ONVIF	
Internal memory	Micro SD card (optional)	
Video Content Analytics (VCA)	No	
Ethernet connector	RJ-45	
Ethernet standards	10Base-T / 100Base-TX	
Classification	IP-54	IP-66
Vandal-proof	Yes, IK7	No
Heater & fan	No	Yes
Camera mounting	Screw mount	
Housing colour	Beige	White
Housing material	Plastic	Aluminium
Integrated IR LEDs	No	Wave length: 850 nm Illuminants: 24 LEDs Range: Max. 25 m*
Voltage	PoE	12 V DC, 24 V AC, PoE
PoE standard	IEEE 802.3af	
Power consumption	4 watt	
Operting temperature	-20° to +50° C	-10° to +50° C
Storage temperature	-20° to +60° C	
Relative humidity	10 - 90% non-condensing	
Dimensions (D x H)	110 x 48 mm	117 x 90 mm
Weight	Approx. 200 g	Approx. 280 g
Certification	CE, RoHS	
Items included in the delivery	Quick installation guide, CD (IP-Finder, user manual)	Quick installation guide, CD (IP-Finder, user manual), Accessories for surface mount
Supported languages	German, English	

* Note:
The range of the built-in IR-LEDs depends on the location and the surroundings. Strongly absorbent surfaces, e.g. dark, rough structures (floor, lawn or asphalt), may lead to a considerable reduction of the maximum range.

Subject to technical changes without notice. Errors excepted.

5. Technical specifications: SNC-4302, SNC-5312IR, SNC-5315IR

Camera	SNC-5312IR	SNC-5315IR	SNC-5323IR
Camera type	Full HD IP day/night IR bullet camera		
	2 MP	5 MP	3 MP
Sensor type	1/2.7” Progressive Scan CMOS Sensor	1/2.5” Progressive Scan CMOS Sensor	1/2.8” Progressive Scan CMOS Sensor
Resolution (pixel)	Max. 2 MP (1920 x 1080)	5MP(2592x1944)max. 2 MP at MJPEG	Max. 3 MP (2048 x 1536)
Video codec	H.264 / MJPEG		
Max. frame rate	25 fps at 2 MP (1920 x 1080)	12 fps at 5 MP, 15 fps at 3 MP 25 fps at 2 MP	15 fps bei 3 MP 25 fps bei 2 MP
Number of video streams	4		
Lens mount	Internal		
Iris control	DC		
Lens type	Motorised DC vario lens		3x auto focus lens
Focal length	3 - 9 mm / F1.2		
Angle of view (horizontal)	36° - 104°	36-105° at 5MP 29-83° at 3 MP 27-79° at 5 MP	31° - 95° bei 3 MP 28° - 90° bei 2 MP
Sensitivity	0.2 (colour) / 0.02 (S/W) / 0.0 (IR-LED)		
IR cut filter	Mechanical		
Day/night mode adjustment	Auto, colour black-white		
Automatic Gain Control (AGC)	Yes		
Digital Noise Reduction (DNR)	3DNR, SPQ		
Shutter speed	1-1/10000 sec.		
White balance	AWB, ATW, manual		
Backlight compensation	BLC, WDR		
Wide Dynamic Range (WDR)	4 levels, digital		
Digital zoom	Yes		
Mirroring (vertical)	Yes		
Motion detection	Yes		
Privacy zones	Yes, 5 zones		
Tampering alarm	Yes		
Camera title	Yes		
Video output	BNC, 75 Ohm, 1 Vpp		
Audio support	Yes, 2-way		
Audio input/output	1 / 1 (3,5 mm phone jack)		
Audio codec	G.711 / G.726		
Alarm contacts I/O	1 / 1		

(continue on next page)

Camera	SNC-5312IR	SNC-5315IR	SNC-5323IR
RS-485 interface	No		
Alarm management	HTTP, FTP, SMTP		
Schedule	Yes		
Management software support	NUUO, Genetec and others		
Security features	HTTPS, IP Filter, IEEE 802.1X		
Supported protocols	UPnP, Bonjour, DHCP, FTP, HTTP, SMTP, RTSP		
Supported software standards	ONVIF		
Internal memory	Micro SD card (optional)		
Video Content Analytics (VCA)	No		
Ethernet connector	RJ-45		
Ethernet standards	10Base-T / 100Base-TX		
Classification	IP-66		
Vandal-proof	yes		
Heater & fan	No		
Camera mounting	Screw mount		
Housing colour	White		
Housing material	Aluminium		
Integrated IR LEDs	Wave length: 850 nm Illuminants: 23 LEDs Range: Max. 25 m*		
Voltage	12 V DC, 24 V AC, PoE		
PoE standard	IEEE 802.3af		
Power consumption	11.6 watt		
Operting temperature	-20° to +50° C		
Storage temperature	-20° to +60° C		
Relative humidity	10-90% non-condensing		
Dimensions (D x H)	92 x 88 x 296 mm		
Weight	Approx. 1.100 g		
Certification	CE, RoHS		
Items included in the delivery	Quick installation guide, CD (IP-Finder, user manual), Ceiling/wall bracket Sunshield		
Supported languages	German, English		

* Note:
The range of the built-in IR-LEDs depends on the location and the surroundings. Strongly absorbent surfaces, e.g. dark, rough structures (floor, lawn or asphalt), may lead to a considerable reduction of the maximum range.

Subject to technical changes without notice. Errors excepted.

5. Technical specifications: SNC-6202, SNC-6212IR

Camera	SNC-6202	SNC-6212IR
Camera type	Full HD IP day/night dome camera	Full HD IP day/night IR dome camera
	2 MP	
Sensor type	1/2.7” Progressive Scan CMOS Sensor	
Resolution (pixel)	Max. 2 MP (1920 x 1080)	
Video codec	H.264 / MJPEG	
Max. frame rate	25 fps at 2 MP (1920 x 1080)	
Number of video streams	4	
Lens mount	Internal	
Iris control	DC	
Lens type	Built-in manual vario lens	
Focal length	3 - 9 mm / F1.2	
Angle of view (horizontal)	36° - 104°	
Sensitivity	0.2 (colour) / 0.02 (black/white)	
IR cut filter	Mechanical	
Day/night mode adjustment	Auto, colour, black/white	
Automatic Gain Control (AGC)	Yes	
Digital Noise Reduction (DNR)	3DNR, SPQ	
Shutter speed	1-1/10000 sec.	
White balance	AWB, ATW, manual	
Backlight compensation	BLC	
Wide Dynamic Range (WDR)	4 levels, digital	
Digital zoom	Yes	
Mirroring (vertical)	Yes	
Motion detection	Yes	
Privacy zones	Yes, 5 zones	
Tampering alarm	Yes	
Camera title	Yes	
Video output	BNC, 75 Ohm, 1 Vpp	
Audio support	Yes, 2-way	
Audio input/output	1 / 1 (3.5 mm phone jack)	
Audio codec	G.711 / G.726	
Alarm contacts I/O	1 / 1	

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Camera	SNC-6202	SNC-6212IR
RS-485 interface	No	
Alarm management	HTTP, FTP, SMTP	
Schedule	Yes	
Management software support	NUUO, Genetec and others	
Security features	HTTPS, IP Filter, IEEE 802.1X	
Supported protocols	UPnP, Bonjour, DHCP, FTP, HTTP, SMTP, RTSP	
Supported software standards	ONVIF	
Internal memory	Micro SD card (optional)	
Video Content Analytics (VCA)	No	
Ethernet connector	RJ-45	
Ethernet standards	10Base-T / 100Base-TX	
Classification	IP-44	
Vandal-proof	Yes, IK10	
Heater & fan	No	
Camera mounting	Screw mount	
Housing colour	White	
Housing material	Plastic	
Integrated IR LEDs	No	Wave length: 850 nm Illuminants: 24 LEDs Range: Max. 20 m*
Voltage	12 V DC, 24 V AC, PoE	
PoE standard	IEEE 802.3af	
Power consumption	6 watt	4.5 watt without IR-LEDs 8 watt with IR-LEDs
Operting temperature	-20° to +50° C	
Storage temperature	-20° to +60° C	
Relative humidity	10-90% non-condensing	
Dimensions (D x H)	149 x 100 mm	
Weight	Approx. 550 g	
Certification	CE, RoHS	
Items included in the delivery	Quick installation guide, CD (IP-Finder, user manual), power cable with terminal block, rubber gasket, screws/anchors	
Supported languages	German, English	

* Note:
The range of the built-in IR-LEDs depends on the location and the surroundings. Strongly absorbent surfaces, e.g. dark, rough structures (floor, lawn or asphalt), may lead to a considerable reduction of the maximum range.

Subject to technical changes without notice. Errors excepted.

5. Technical specifications: SNC-6302, SNC-6312IRH, SNC-6315IRH

Camera	SNC-6302	SNC-6312IRH	SNC-6315IRH	SNC-6323IRH
Camera type	Full HD IP day/night dome camera	Full HD IP day/night IR dome camera		
	2 MP		5 MP	3 MP
Sensor type	1/2.7” Progressive Scan CMOS Sensor		1/2.5” Progressive Scan CMOS Sensor	1/2.8” Progressive Scan CMOS Sensor
Resolution (pixel)	Max. 2 MP (1920 x 1080)		Max. 5 MP (2592x1944) max. 2MP at MJPEG	Max. 3 MP (2048x1536)
Video codec	H.264 / MJPEG			
Max. frame rate	25 fps at 2 MP (1920 x 1080)		12 fps at 5 mP 15 fps at 3 MP 25 fps at 2 MP	15 fps at 3 MP 25 fps at 2 MP
Number of video streams	4			
Lens mount	Internal			
Iris control	DC			
Lens type	Built-in manual vario lens	Motorised DC vario lens		
Focal length	3 - 9 mm / F1.2			
Angle of view (horizontal)	36° - 104°		36-105° at 5MP 29-83° at 3 MP 27-79° at 2 MP	29-83° at 3 MP 27-79° at 2 MP
Sensitivity	0.2 (colour) / 0.02 (black/white)	0.2 (colour) / 0.02 (black/white)/ 0.0 (IR-LED)		
IR cut filter	Mechanical			
Day/night mode adjustment	Auto, colour, black/white			
Automatic Gain Control (AGC)	Yes			
Digital Noise Reduction (DNR)	3DNR, SPQ			
Shutter speed	1-1/10000 sec.			
White balance	AWB, ATW, manual			
Backlight compensation	BLC			
Wide Dynamic Range (WDR)	4 levels, digital			
Digital zoom	Yes			
Mirroring (vertical)	Yes			
Motion detection	Yes			
Privacy zones	Yes, 5 zones			
Tampering alarm	Yes			
Camera title	Yes			
Video output	BNC, 75 Ohm, 1 Vpp			
Audio support	Yes, 2-way			
Audio input/output	1 / 1 (3.5 mm phone jack)			
Audio codec	G.711 / G.726			
Alarm contacts I/O	1 / 1			

(continue on next page)

Camera	SNC-6302	SNC-6312IRH, SNC-6315IRH, SNC-6323IRH
RS-485 interface	No	
Alarm management	HTTP, FTP, SMTP	
Schedule	Yes	
Management software support	NUUO, Genetec and others	
Security features	HTTPS, IP Filter, IEEE 802.1X	
Supported protocols	UPnP, Bonjour, DHCP, FTP, HTTP, SMTP, RTSP	
Supported software standards	ONVIF	
Internal memory	Micro SD card (optional)	
Video Content Analytics (VCA)	No	
Ethernet connector	RJ-45	
Ethernet standards	10Base-T / 100Base-TX	
Classification	IP-66	
Vandal-proof	Yes, IK10	
Heater & fan	No	Yes
Camera mounting	Screw mount	
Housing colour	White	
Housing material	Aluminium	
Integrated IR LEDs	No	Wave length: 850 nm Illuminants: 24 LEDs Range: Max. 25 m*
Voltage	12 V DC, 24 V AC, PoE	
PoE standard	IEEE 802.3af	
Power consumption	6 watt	7 watt / 12 watt with heater
Operting temperature	-20° to +50° C	-30° to +55° C
Storage temperature	-20° to +60° C	
Relative humidity	10-90% non-condensing	
Dimensions (D x H)	151 x 130 mm	
Weight	Approx. 800 g	
Certification	CE, RoHS	
Items included in the delivery	Quick installation guide, CD (IP-Finder, user manual), Accessories for surface mount	
Supported languages	German, English	

* Note:
The range of the built-in IR-LEDs depends on the location and the surroundings. Strongly absorbent surfaces, e.g. dark, rough structures (floor, lawn or asphalt), may lead to a considerable reduction of the maximum range.

Subject to technical changes without notice. Errors excepted.

5. Technical specifications: SNC-8322I, SNC-8322HO

Camera	SNC-8322I	SNC-8322HO
Camera type	Full HD IP speed dome for indoor applications	Full HD IP speed dome for outdoor applications
	2 MP	
Sensor type	1/2.8” Sony Progressive Scan CMOS	
Resolution (pixel)	2 MP (1920 x 1080)	
Video codec	H.264 / MJPEG	
Max. frame rate	25 fps at 2 MP (1920 x 1080)	
Number of video streams	4	
Signal processing	Digital (DSP)	
Synchronisation	Internal	
S/N ratio	> 50 dB	
Lens type	Integrated motor zoom lens (DC-controlled)	
Focal length	4,7 - 94 mm	
Sensitivity	0.3 (colour) / 0.04 (black/white)	
IR cut filter	Mechanical	
Day/night mode adjustment	Auto, colour, black/white	
Automatic Gain Control (AGC)	Yes	
Digital Noise Reduction (DNR)	3DNR, SPQ	
Shutter speed	1/30 – 1/10000 sec.	
White balance	AWB, ATW, indoor, outdoor	
Backlight compensation	BLC, WDR	
Wide Dynamic Range (WDR)	4 levels, digital	
Digital zoom	20x optical; 8x digital	
Image stabilization	Yes, digital	
Mirroring (vertical)	Yes	
Picture-flip (horizontal)	Yes	
Motion detection	Yes	
Privacy zones	Yes, 16 zones	
Camera title	Yes	
Preset positions	256	
Auto scan	8	
Tours	8	
Patterns	4	
Rotation radius	360°/sec.	
Rotation speed	5° - 400°/sec.	
Preset speed	360°/sek.	
Tilt angle	-10° to 100° (digital flip)	

(continue on next page)

Camera	SNC-8322I	SNC-8322HO
Tilt speed	0.05° – 400°/sec.	
Audio support	Yes, 2-way	
Audio codec	G.711 / G.726	
Alarm inputs/outputs	4 / 2	
Alarm contacts I/O	4 / 2	
Alarm management	HTTP, FTP, SMTP	
Management software support	Various VMS	
Security features	HTTPS, IP Filter, IEEE 802.1X	
Supported protocols	TCP, IP, HTTP, HTTPS, FTP, UDP, DHCP, NTP, RTP, RTSP, SMTP	
Supported software standards	ONVIF	
Internal memory	Micro SD-card (optional)	
Ethernet connector	RJ-45	
Ethernet standards	10Base-T / 100Base-TX	
PoE (Power-over-Ethernet)	IEEE 802.3af	
Vandal-proof	Yes, IP-44	Yes, IP-66
Heater	No	Yes
Camera mounting	Screw mount	
Housing colour	White	
Housing material	Aluminium	
Integrated LEDs	No	
Voltage	PoE, 24 V AC	PoE (without heater), 24 V AC
Power consumption	20 watt	20 watt (PoE) 50 watt (24 V AC)
Operating temperature	0° to +40° C	-20° to +50° C without heater -40° to +50° C with heater
Storage temperature	-20° to +60° C	
Rel. humidity	10 - 80%	
Dimensions (D x H)	172 x 229 mm	193 x 283 mm
Weight	Approx. 1.65 kg	Approx. 2.4 kg
Certification	CE	
Items included in the delivery	Quick installation guide, CD (IP-Finder, user manual)	
Supported languages	English, German	

Subject to technical changes without notice. Errors excepted.

Appendix A: Internet security setup

If ActiveX control installation is blocked, please either set the Internet security level to default or change ActiveX controls and plug-in settings.

Internet security level: Default:

1. Open the „Internet Options“ menu.
2. Select “Security”.
3. Click on „Reset all zones to default level“.
4. Confirm by clicking “Apply” or “OK”.

If the default settings don’t work, please use the customized settings for ActiveX Controls.

Internet security level: Customized:

1. Open the „Internet Options“ menu.
2. Select “Security”.
3. Click on „Custom level“
4. Enable the following options:
   - All previously unused ActiveX Controls run without prompting.
   - Allow scriptlets.
   - Automatic promptinf for ActiveX Controls.
   - Binary and scripts.
   - Display video and animation on a webpage that does not use external media player
   - Download signed ActiveX controls
   - Download unsigned ActiveX Controls.
   - Initialize and script ActiveX controls are not marked as safe for scripting
   - Run ActiveX Controls and plug-ins.
   - Script ActiveX Controls are marked as safe for scripting. .
5. Confirm by clicking “OK“.
6. Confirm by clicking „Apply“ or „OK“.

To activate all settings in the Internet Explorer, please restart it!

Appendix B: Flange back adjustment

Only for SNC-3302, SNC-3303 and SNC-3305

Note:
The lens is not included in the camera delivery. Please see the SANTEC webshop www.santec-video.com for recommended lenses.

Manual flange back adjustment should only be made if the used lens doesn't achieve a focus on its own.

Loosen the little lock screw using the Allen wrench (which is included in this delivery).
Now carefully turn the ring left or right to adjust the flange back. Fasten the little lock screw again.

Part II: Camera configuration and control via the web

1. General

The camera can conveniently be operated by accessing it via the web. There are 2 options to access the camera:

1. Using the IP-Finder:
   On the supplied CD, you will find the SANTEC IP-Finder. Please install the IP Finder on your computer/laptop. Start the IP-Finder. All IP devices in this network will be found automatically and listed here with their IP address. Double-click on the desired device.
2. Using the Web Browser:
   Start your Web Browser and enter the IPaddress in the address field.
   Default IP address: 192.168.1.168
   (or DHCP-assigned address, if available (see IP-Finder))

Default user name: **admin**
Default password: **9999**

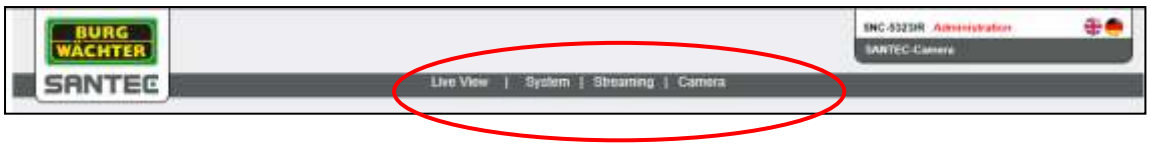
Wenn ein Internet Sicherheitshinweis erscheint, klicken Sie bitte auf “Installieren”.

The live view page is displayed now.

Note:
It is highly recommended to change the default user name and password here (see chapter 2.3.2.1:
System ➜ Security ➜ User

2. Menu overview

Once the camera is connected to the power and the camera is accessed via the web browser, you will see the live view. Click on “Admin” and the following items will be displayed in the menu bar on the top of the screen.
<Live view>, <System>, <Streaming> and <Camera>.



Live view:
The live picture is displayed.

System:
The administrator can set the host name, system time zone and other time options.

Streaming:
The administrator can modify the video resolution and the video rotate type.

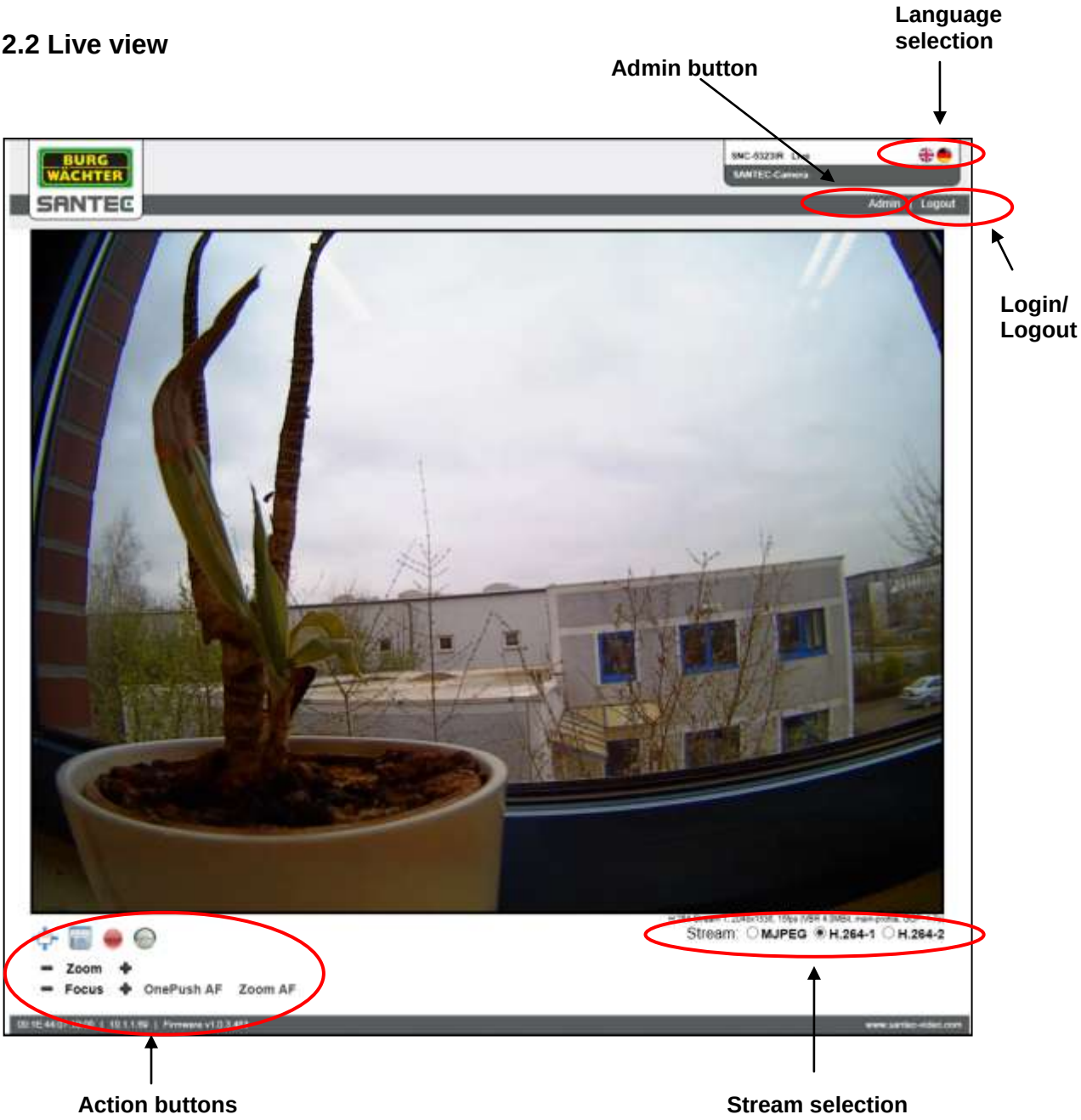
Camera:
Users can adjust various camera parameters.

PTZ *(only for SNC-3322, SNC-8322I and SNC-8322HO):*
Here you can adjust the settings for pan, tilt and zoom functions.

2.1 Administration page

Click on the <Admin> button (see screenshot below) to access the administration page. Here you can make a number of adjustments and settings (see the following chapters).

2.2 Live view



Supported languages:
On the live view page, you can select your language by clicking on the respective flag icon: English or German.

Logout:
Click on the <Logout> button in the upper right corner and the login window will pop up. This enables the user to login with another user name.

Action buttons:

- Full screen
  Click this button to display the live image as full screen. To exit the full screen view and to return to the regular view, please double-click into the full screen image
- Talk
  Talk function allows the local site to talk to the remote site. Click on the button to switch it to on/off.
  This function is only available (hence the talk icon is only visible) if the audio mode has been enabled (see chapter “2.4.8 Audio”).
  Note:
  This function is only open to a “user” who has been granted this privilege by the administrator.
- Speaker
  Click on this button to mute/activate the audio function.
  This function is only available (hence the talk icon is only visible) if the audio mode has been enabled (see chapter “2.4.8 Audio”).
  Note:
  This function is only open to a “user” who has been granted this privilege by the administrator.
- Snapshot
  Click on this button and a JPEG/JPG snapshot is made of the live picture. By default, it will be stored on your C:\ drive.
  Note:
  For users with Windows 7 operating system, it is required to log on as an administrator to implement the snapshot function.
- Recording
  Click on this button and the live picture is recorded. The recording button lights up in bright red colour while recording. The recorded clip is by default saved to your C:\ drive.
  Note:
  For users with Windows 7 operating system, it is required to log on as an administrator to implement the snapshot function.
- Output contact
  Click on this button to activate the output contact.

Zoom and focus adjustment *(only for models with motorised lens):*

- Zoom:
  Use the mouse to to click on < - > or < + > to manually zoom in or out.
  Click on ↻ to restore the previous settings.
- Focus:
  Use the mouse to to click on < - > or < + > to manually focus.
  Click on ↻ to restore the previous settings.
  If you move the mouse into the live image and scroll the mouse wheel, zoom and focus will be adjusted simultaneously.
- One Push AF, Zoom AF:
  If you click on <One Push AF > or <Zoom AF >, the camera automatically sets the focus and the zoom.

Zoom, iris and focus adjustment *(only for SNC-8322I and SNC-8322HO)*

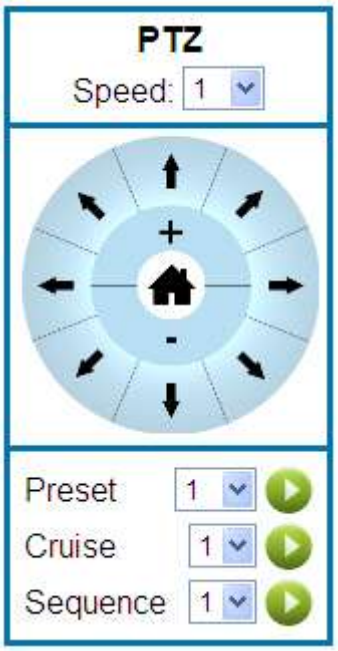
- Zoom:
  Click on < - > or < + > to manually zoom in or zoom out the picture.

- Iris:
  Click on < - > or < + > to open and close the iris.
  Click on “Auto iris” to automatically control the iris.

- Focus:
  Click on < - > or < + > to manually adjust the focus.
  Click on “auto focus” to set the focus once.

PTZ control:

- Speed:
  Select the PTZ speed (1-10).
- Pan/tilt arrows:
  Click on the arrows to move the picture.
- “+” and “-“:
  Click here to zoom in or out.
- Preset:
  List of presets (1-10).
- Cruise:
  List of cruises (1-8).
- Sequence:
  List of sequences (1-8).



Instead of using the PTZ control panel, you may alternatively click into the live picture to move it (SANTEC “EasyViewPTZ” technology).

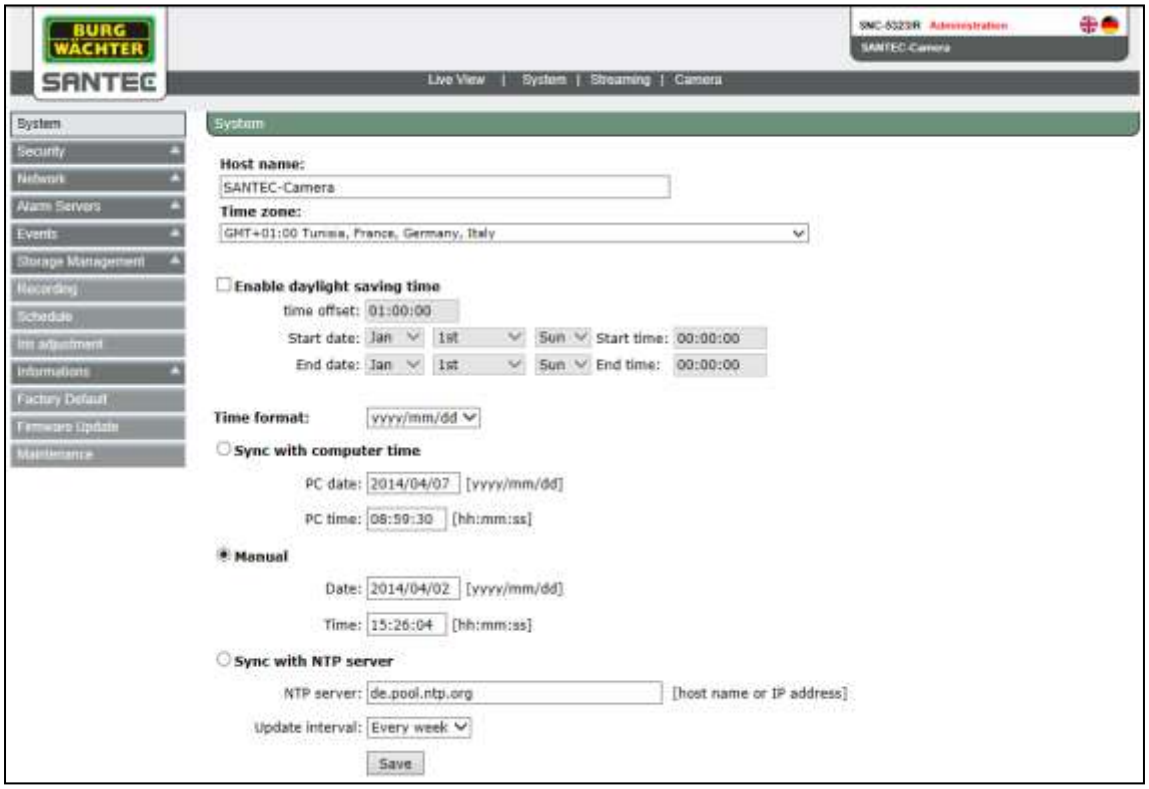
Note on “Easy View PTZ” function:
If you use another browser than the Microsoft Internet Explorer, the stream has to be set to MJPEG in order to be able to use the „Easy ViewPTZ“ function.
If you use an iOS based device (e.g. iPhone or iPad), you can zoom in or zoom out the live view by using your fingers to pitch open and pitch close.

2.3 System

This page is only available to the administrator.

2.3.1 System

The system setting can be found under the path: **System > System**



Host name:
Enter a host name here for camera identification (max. 36 characters). If the motion detection function is enabled and is set to send alarm message by mail/FTP, the host name entered here will display in the alarm message.
This information is also used for identification of the IP Finder (display, name).

Time zone:
Select your time zone from the drop-down menu.

Enable daylight saving time:
To enable daylight saving time, please check the item and then specify the time offset (format: [hh:mm:ss], e.g. 01:00:00 for one hour) and duration (day and time).
At delivery, this option is activated and daylight saving time is set automatically.

Time format:
Select the type of time format:

- DD/MM/YYYY
- YYYY/MM/DD

Sync with computer time:
Select the item and video date and time display will synchronize with the PC's.

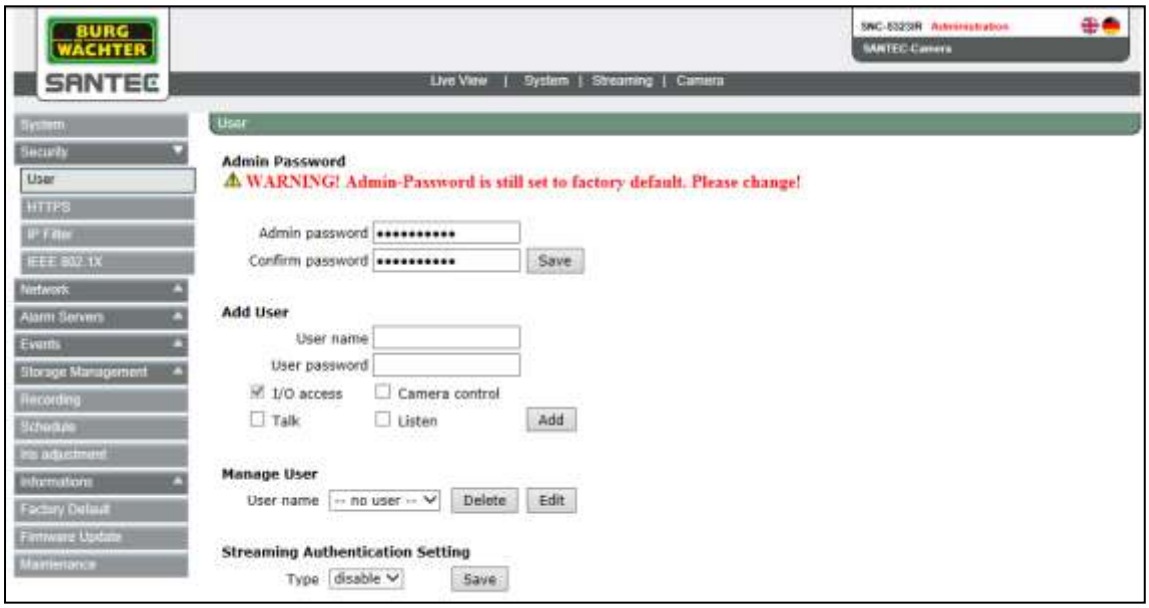
Manual:
The administrator can set the video date and time manually.

Sync with NTP server:
Network Time Protocol (NTP) is an alternative way to synchronize your camera's clock, i.e. with a NTP server. Please specify the NTP server you wish to synchronize in the enter field (host name or IP address). Then select an update interval from the drop-down menu. For further information about NTP, please refer to their web site: www.ntp.org.

2.3.2 Security

2.3.2.1 User

The user setting can be found under this path: **System > Security > User**



Admin password:
Change the administrator's password by entering the new password in both text boxes. The input characters/numbers will be displayed as dots for security reasons. After clicking on <Save>, the web browser will ask the administrator for the new password for accessing. The maximum length of the password is 14 characters.

Note:
The following characters are valid: A-Z, a-z, 0-9, !#$%&'-.@^_~.

Add user:
Enter the new user's name and password and click on <Add> to add the new user. The user name can be up to 11 characters and the maximum length of the password is 14 characters. The new user will be displayed in the user name list. There is a maximum of 20 user accounts. Each user can be assigned the privileges of “Camera control”, “Talk” and “Listen”.

- I/O access:
  This item supports fundamental functions that enable users to view videos when accessing the camera.

- Camera control:
  This item allows the appointed user to change camera parameters on the camera setting page.

- Talk / Listen:
  Talk and listen functions allow the appointed user in the local site (PC site) communicating with, for instance, the administrator in the remote site.

Manage user:

- Delete user:
  To delete a user, pull down the user list and select the user name you wish to delete. Then click on <Delete> to remove it.

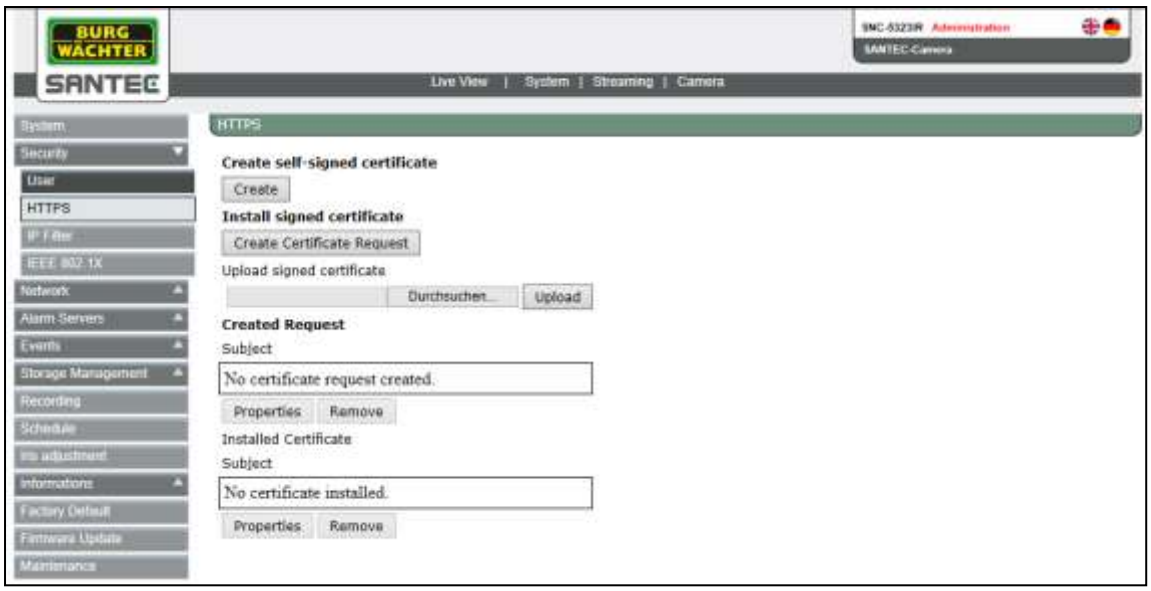
- Edit user:
  Pull down the user list and select a user name. Click on <Edit> to edit the user’s password and privilege.

  Note:
  It is required to enter the user password and to check the items which will be available for the user. When finished, click on <Save> to modify the account authority.

- Streaming authentication setting:
  Disable: The RTSP video stream can be accessed by any computer without a user name and password.
  Basic: To access the RTSP video stream, a user name and a password is required. Their transmission, however, is not secured. On the other hand, this method is supported by most streaming clients.
  Digest: To access the RTSP video stream, a user name and a password is required. Their transmission is secured.
  To confirm, click on <Save>.

2.3.2.2 HTTPS

The HTTPS setting can be found under this path: **System > Security > HTTPS**



HTTPS allows secure connections between the IP camera and web browser using Secure Socket Layer (SSL) or Transport Layer Security (TLS) which protect camera settings or user name/password info against snooping. It is required to install a self-signed certificate or a CA-signed certificate for implementing HTTPS.

To use HTTPS on the IP cameras, a HTTPS certificate must be installed. The HTTPS certificate can be obtained by either creating and sending a certificate request to a Certificate Authority (CA) or creating a self-signed HTTPS certificate, as described below.

Create self-signed certificate:
Before a CA-issued certificate is obtained, users can create and install a self-signed certificate first.

Click on the <Create> button under “Create self-signed certificate” and provide the requested information (name, country, etc) to install a self-signed certificate for the IP camera. Please refer to the last part of this section <Provide the Certificate Information> for more details.

Note:
The self-signed certificate does not provide the same high level of security as a CA-issued certificate.

Install signed certificate:
Click on the <Create Certificate Request> button to create and submit a certificate request in order to obtain a signed certificate from CA.

Provide the request information (name, country, etc.) in the create dialog. Please refer to <Provide the Certificate Information> for more details.

When the request is complete, the subject of the created request will be shown in the field. Click on <Properties> below the subject field, copy the PEM-formatted request and send it to your selected CA.

When the signed certificate is returned, install it by uploading the signed certificate.

Provide the certificate information:
To create a self-signed HTTPS certificate or a certificate request to CA, please enter the information as requested:

	Create Self Signed Certificate	Create Certificate Request
Country	√	√
State or Province	√	√
Locality	√	√
Organization	√	√
Organizational Unit	√	√
Common Name	√	√
Valid days	√	-

- Country:
  Enter a 2-letter combination code to indicate the country the certificate will be used in, e.g. “US” for United States, “DE” for Germany, etc.

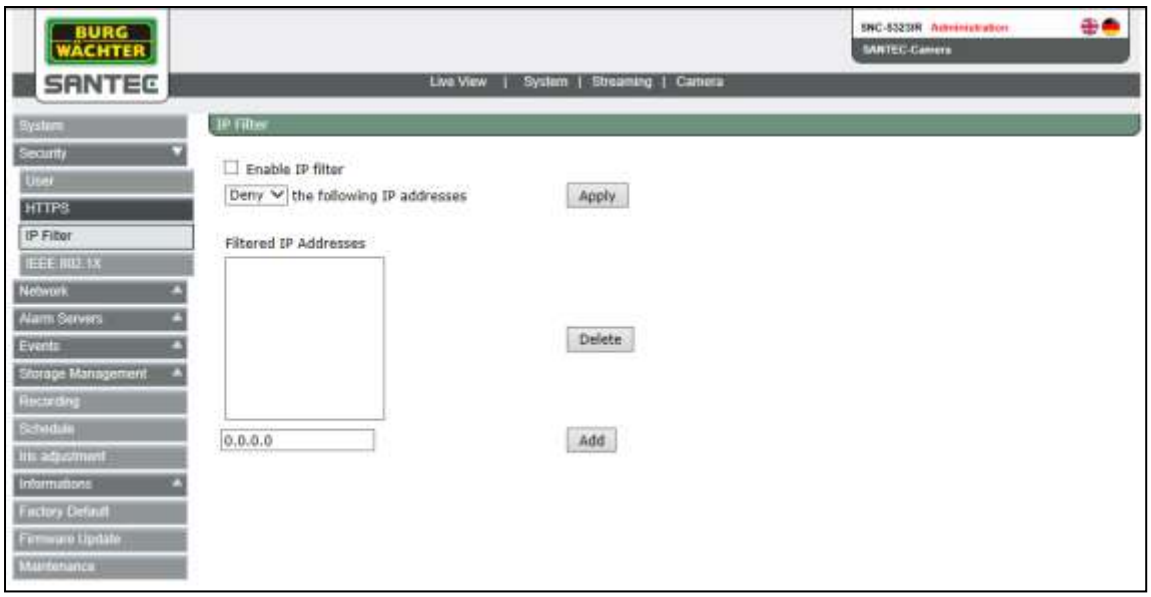
- State or province:
  Enter the local administrative region.
  .

- Locality:
  - Enter the city.
- Organization:
  Enter the name of the organization (company) to which the person identified in “Common Name” belongs.
- Organization Unit:
  Enter the name of the organizational unit (department) to which the person identified in “Common Name” belongs.
- Common Name:
  Indicate the name of the person who issues the certificate.
- Valid days:
  Enter the number of day (1-9999) to indicate how long the certificate should be valid.

Click on <OK> to save the certificate information.

2.3.2.3 IP Filter

The IP filter setting can be found under this path: **System > Security > IP Filter**



Using the IP Filter, access to the IP camera can be restricted by denying/allowing specific IP addresses.

- Enable IP Filter:
  Check the box to enable the IP Filter function. Once enabled, the listed IP addresses (IPv4) will be allowed/denied access to the IP camera.
  Select <Allow> or <Deny> from the drop-down list and click on the <Apply> button to determine the IP Filter behavior.

- Add/Delete IP addresses:
  Enter the IP address and click on the <Add> button to add a new filtered address.
  The “filtered IP addresses list” shows the currently configured IP addresses.
  Up to 256 IP address entries may be specified.
  To remove an IP address from the list, please select the IP address and then click on the <Delete> button.

2.3.2.4 IEEE 802.1X

The IEEE 802.1X setting can be found under this path: **System > Security > IEEE 802.1X**

The IP camera is allowed to access a network protected by 802.1X/EAPOL (Extensible Authentication Protocol over LAN).
Users need to contact the network administrator for gaining certificates, user IDs and passwords.

CA certificate:
The CA certificate is created by the certification authority for the purpose of validating itself. Upload the certificate for checking the server's identity.

Client certificate / private key:
Upload the client certificate and private key for authenticating the IP camera itself.

Settings:

- Identity:
  Enter the user identity associated with the certificate. Up to 16 characters can be used.
- Private key password:
  Enter the password (maximum 16 characters) for your user identity.

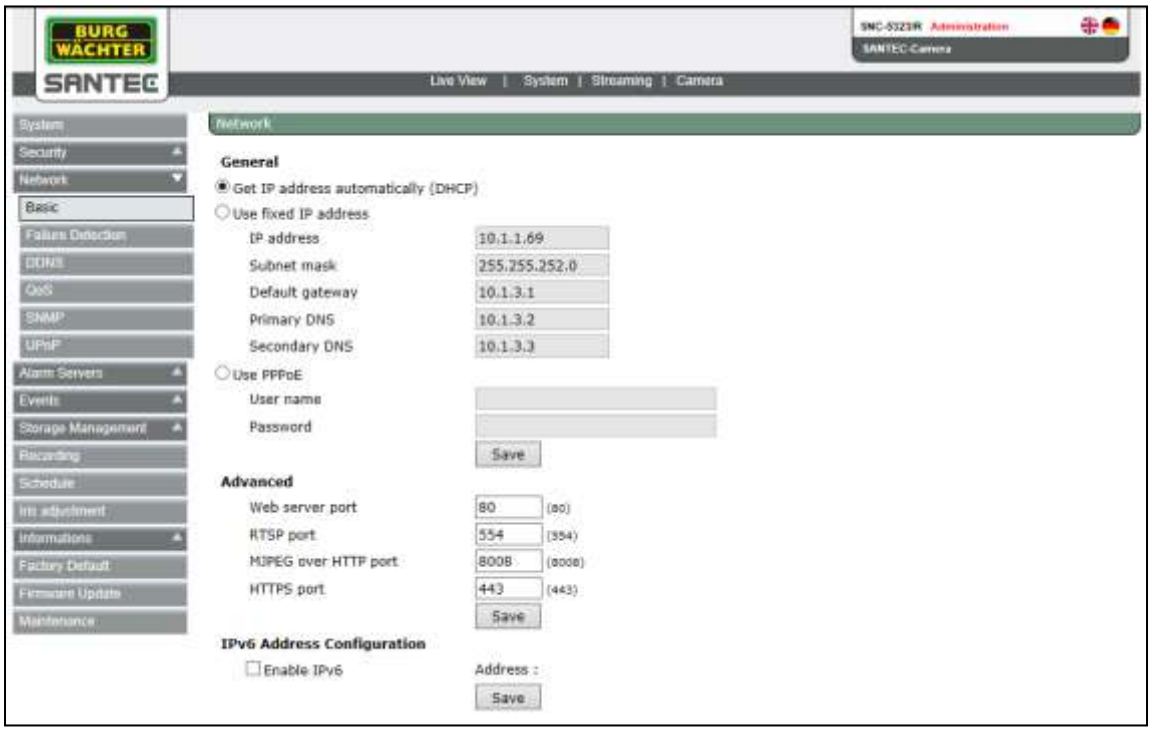
Enable IEEE 802.1X:
Check the box to enable IEEE 802.1X.

Click on <Save> to save the IEEE 802.1X/ EAPOL setting.

2.3.3 Network

2.3.3.1 Basic

The basic settings can be found under this path: **System > Network > Basic**



Users can choose to connect to the IP camera with fixed or dynamic (DHCP) IP addresses. The IP camera also provides PPPoE support for users who connect to the network via PPP over Ethernet (PPPoE).

General:

- Get IP address automatically (DHCP):
  The camera's default IP address is 192.168.1.168.

  If you select <Get IP address automatically> after the IP camera has been connected, you can use the SANTEC IP Finder (included in the supplied CD) to generate an IP address.

- Use fixed IP address:
  To use a static IP address, enter the IP address, e.g. 192.168.1.168. Then go to the default gateway field and change the IP address, e.g. 192.168.1.170.
  Click on <Save> to confirm the new setting.

  When using a static IP address to login to the IP camera, users can access it by using the SANTEC IP Finder (included on the supplied CD).
  - IP address:
    This is necessary for network identification.
  - Subnet mask:
    It is used to determine if the destination is in the same subnet. Default is "255.255.255.0".
  - Default gateway:
    This is the gateway used to forward frames to destinations in different subnets. Invalid gateway settings will create failure of transmission to destinations in different subnets.
  - Primary DNS:
    Primary DNS is the primary domain name server that translates host names into IP addresses.
  - Secondary DNS:
    Secondary DNS is a secondary domain name server that backs up the primary DNS.
- Use PPPoE:
  For the PPPoE users, enter the PPPoE user name and password into the fields and click on the <Save> button to complete the setting.

Advanced:

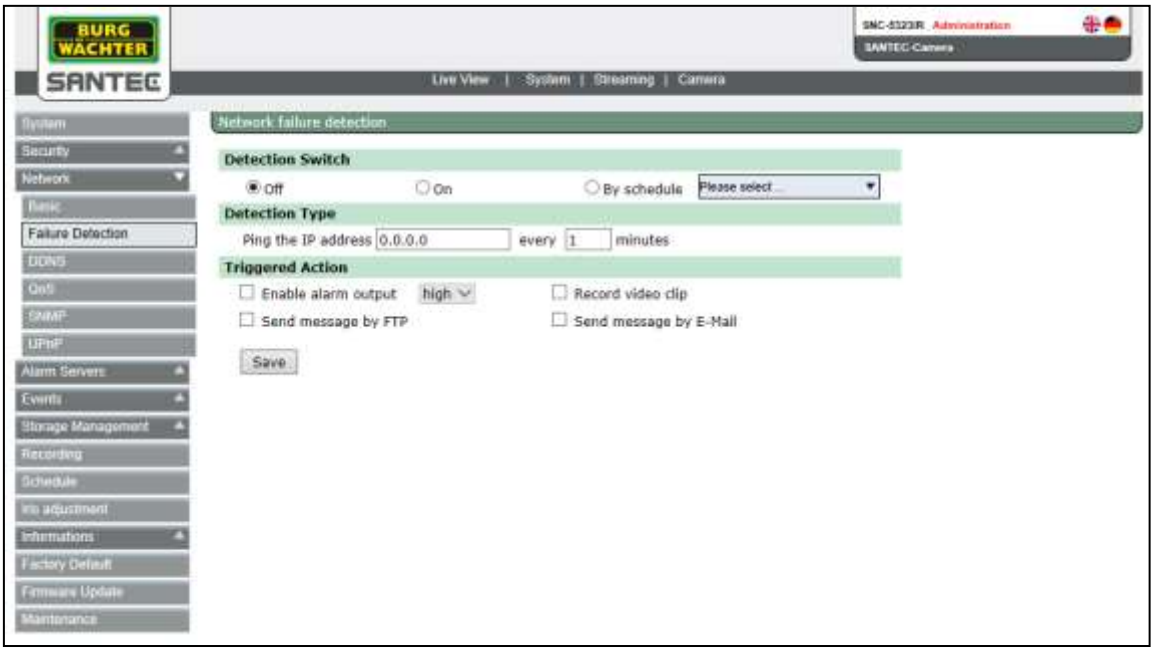
- Web server port:
  The default web server port is 80. Once the port is changed, the user must be notified about the change for the connection to be successful. For instance, when the administrator changes the HTTP port of the IP camera whose IP address is 192.168.1.168 from 80 to 8080, the user must type in the web browser "http:// 192.168.1.168:8080" instead of "http:// 192.168.1.168".
- RTSP port:
  The default setting of the RTSP port is 554; the setting range is from 1024 to 65535.
- MJPEG over HTTP port:
  The default setting of the MJPEG over HTTP port is 8008; the setting range is from 1024 to 65535.
- HTTPS port:
  The default setting of the HTTPS port is 443; the setting range is from 1024 to 65535.

  Note:
  Be aware to choose a different port from the one set for the web server port.

IPv6 address configuration:
With IPv6 support, users can use the corresponding IPv6 address for browsing.
Enable IPv6 by checking the box and click on <Save> to complete the setting.

2.3.3.2 Failure detection

The failure detection settings can be found under this path:
System > Network > Failure Detection



Detection switch:
The detection function can be switched on or off.

Detection type:
Here you can enter the IP address and the frequency in minutes how often this IP addressed should be pinged.

Trigger action:
In case of a network failure, the selected action will be executed:

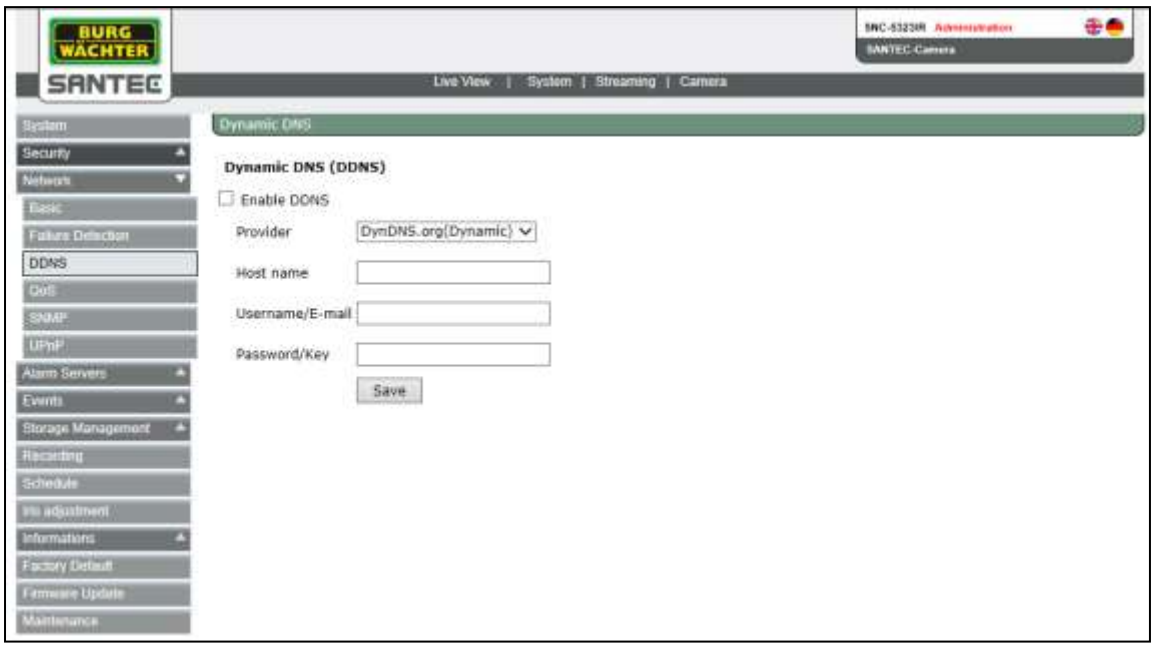
- Enable alarm output (high impedance, low impedance)
- Record a video clip
- Send message by FTP
- Send message by e-mail

} These function can only be enabled provided the required server connection can still be established.

Click on <Save>.

2.3.3.3 DDNS

The DDNS setting can be found under this path: **System > Network > DDNS**



Dynamic Domain Name System (DDNS) allows a host name to be constantly synchronized with a dynamic IP address. In other words, it allows those using a dynamic IP address to be associated to a static domain name so others can connect to it by name.

Enable DDNS:
Check the item to enable DDNS.

Provider:
Select one DDNS host from the provider list.

Host name:
Enter the registered domain name in the field.

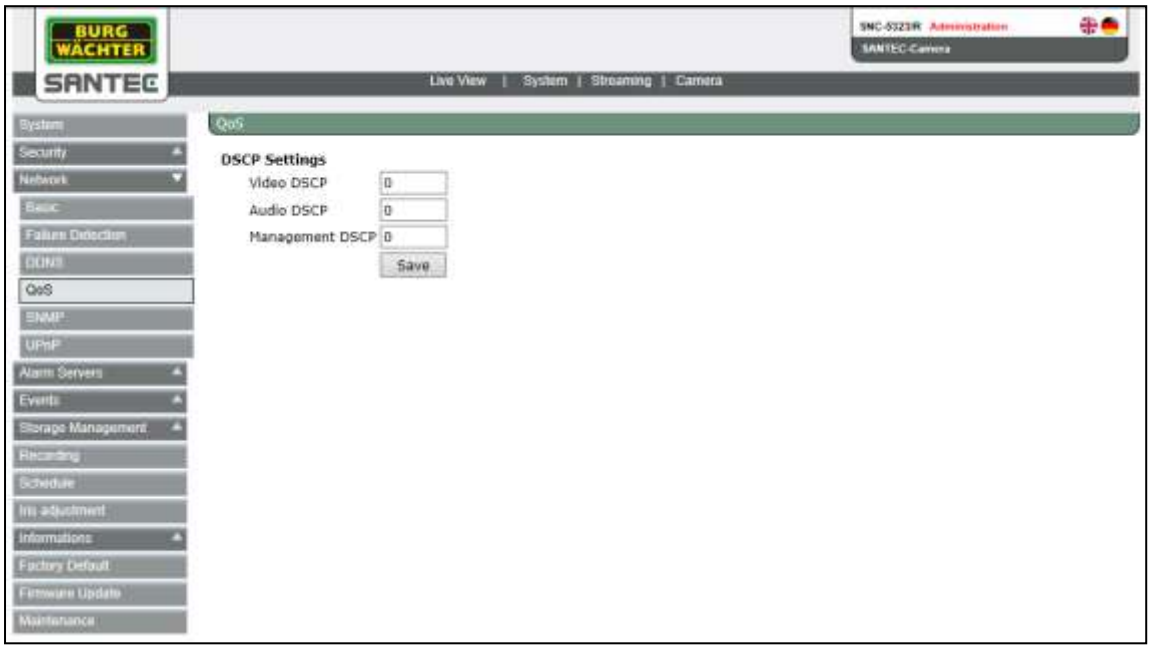
User name/E-mail:
Enter the user name or e-mail required by the DDNS provider for authentication.

Password/Key:
Enter the password or key required by the DDNS provider for authentication.

Click on <Save>.

2.3.3.4 QoS

The Quality of Service (QoS) setting can be found under this path:
System > Network > QoS



QoS allows to transmit packets in the network traffic based on priority. This is particularly important when network congestion occurs. According to the Differentiated Services (DiffServ) model, traffic flows are classified and marked with DSCP (DiffServ Codepoint) values and thus receive the corresponding forwarding treatment from DiffServ capable routers.

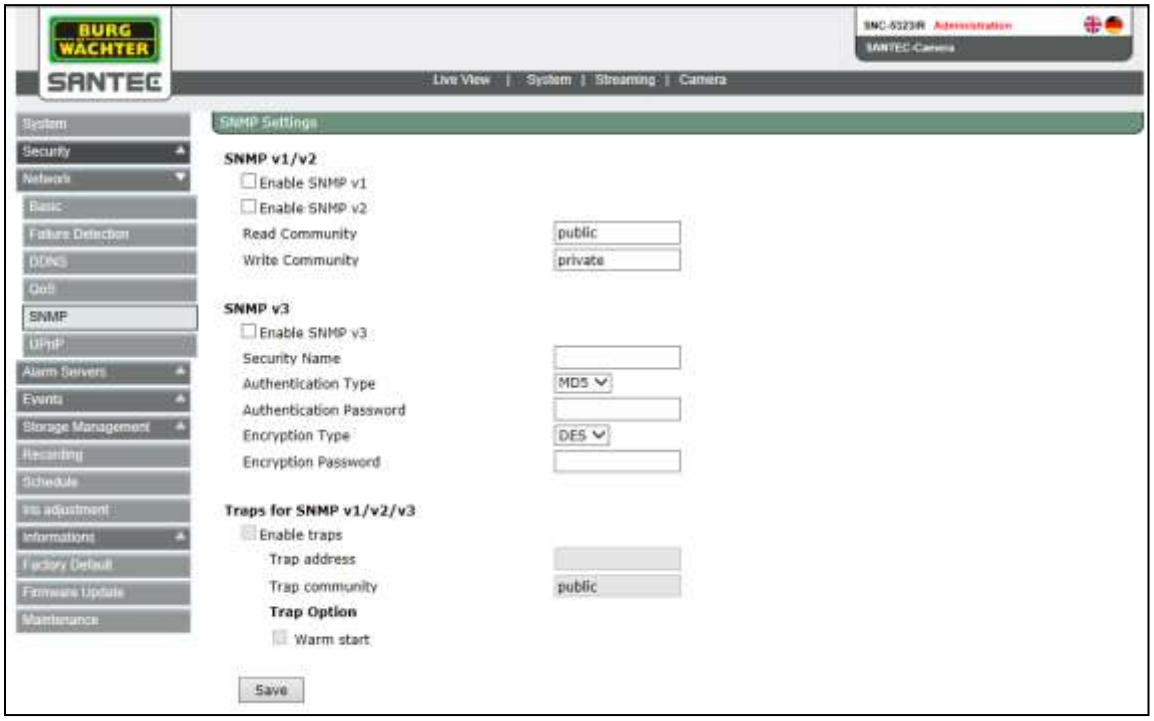
DSCP settings:
The DSCP value range is from 0 to 63. The default DSCP value is 0 which means DSCP is disabled. The IP camera uses the following QoS classes: Video, audio and management.

- Video DSCP:
  The class consists of applications such as MJPEG over HTTP, RTP/RTSP and RTSP/HTTP.
- Audio DSCP:
  Setting the audio priority.
- Management DSCP:
  The class consists of HTTP traffic: Web browsing.

Note:
To enable this function, please make sure the switches/routers in the network support QoS.

2.3.3.5 SNMP

The SNMP (Simple Network Management Protocol) setting can be found under this path:
System > Network > SNMP



With Simple Network Management Protocol (SNMP) support, the IP camera can be monitored and managed remotely by the network management system.

SNMP v1/ v2:

- Enable SNMP v1/ v2:
  Select the version of SNMP to use by checking the respective box.

- Read community:
  Specify the community name that has read-only access to all supported SNMP objects. The default value is “public”.

- Write community:
  Specify the community name that has read/write access to all supported SNMP objects (except read-only objects). The default value is “private”.

SNMP v3:
SNMP v3 provides enhanced security by protecting the camera against unauthorized access.

- Enable SNMP v3:
  Enable SNMP v3 by checking this box.

Note:
All 3 SNMP functions can be enabled at the same time (v1, v2 and v3).

- Security Name:
  The max. length of the security name is 32 digits (A-Z, a-z, 0-9).
  The following special characters are valid: ! # $ % & ´- . @ ^_ ~

- Authentication Type:
  2 authentication types are available: MD5 and SHA.
  Select SHA as the more secure authentication method.

- Authentication Password:
  The authentication password must be at least 8 digits long (A-Z, a-z, 0-9). They will be displayed as dots for security reasons.
  The following special characters are valid: ! # $ % & ´- . @ ^_ ~

- Encryption Type:
  2 encryption types are available: DES and AES.
  Select AES as the more secure method.

- Encryption Password:
  The encryption password must be at least 8 digits long (A-Z, a-z, 0-9). They will be displayed as dots for security reasons.
  The following special characters are valid: ! # $ % & ´- . @ ^_ ~
  Note:
  The encryption password may also be left blank. However, this means that the messages will not be encrypted.

Traps for SNMP v1 / v2:
Traps are used by the IP camera to send massages to a management system for important events or status changes.

- Enable traps:
  Check the box to activate trap reporting.
  Note:
  Traps can only be activated, if at least one SNMP function has been activated before (v1, v2 and/or v3).

- Trap address:
  Enter the IP address of the management server.

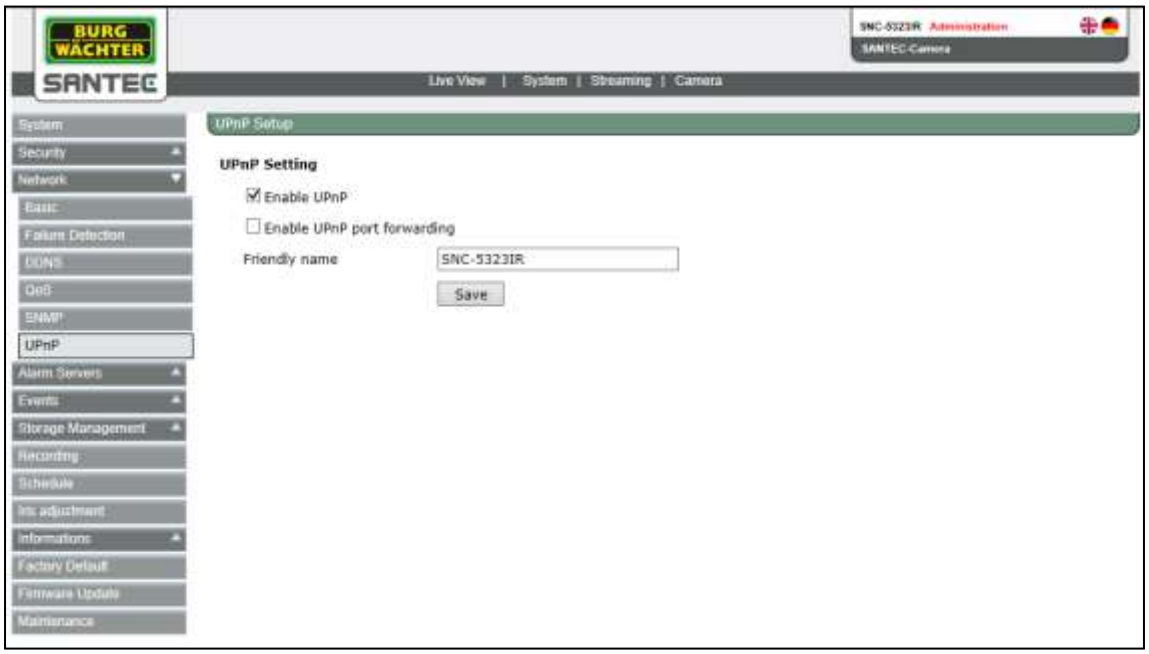
- Trap community:
  Enter the community to use when sending a trap message to the management system.

Trap Option: Warm start:
A warm start SNMP trap signifies that the SNMP device, i.e. the IP camera, performs a software reload.

Click on <Save>.

2.3.3.6 UPnP

The UPnP setting can be found under this path: **System > Network > UPnP**



UPnP setting:

- Enable UPnP:
  When the UPnP is enabled, whenever the IP camera is connected to the LAN, the icon of the connected IP cameras will appear in “My Network Places” to allow for direct access.

Note:
To enable this function, please make sure the UPnP component is installed on your computer.

- Enable UPnP port forwarding:
  When the UPnP port forwarding is enabled, the IP camera is allowed to automatically open the web server port on the router.

Note:
To enable this function, please make sure that your router supports UPnP and that it is activated.

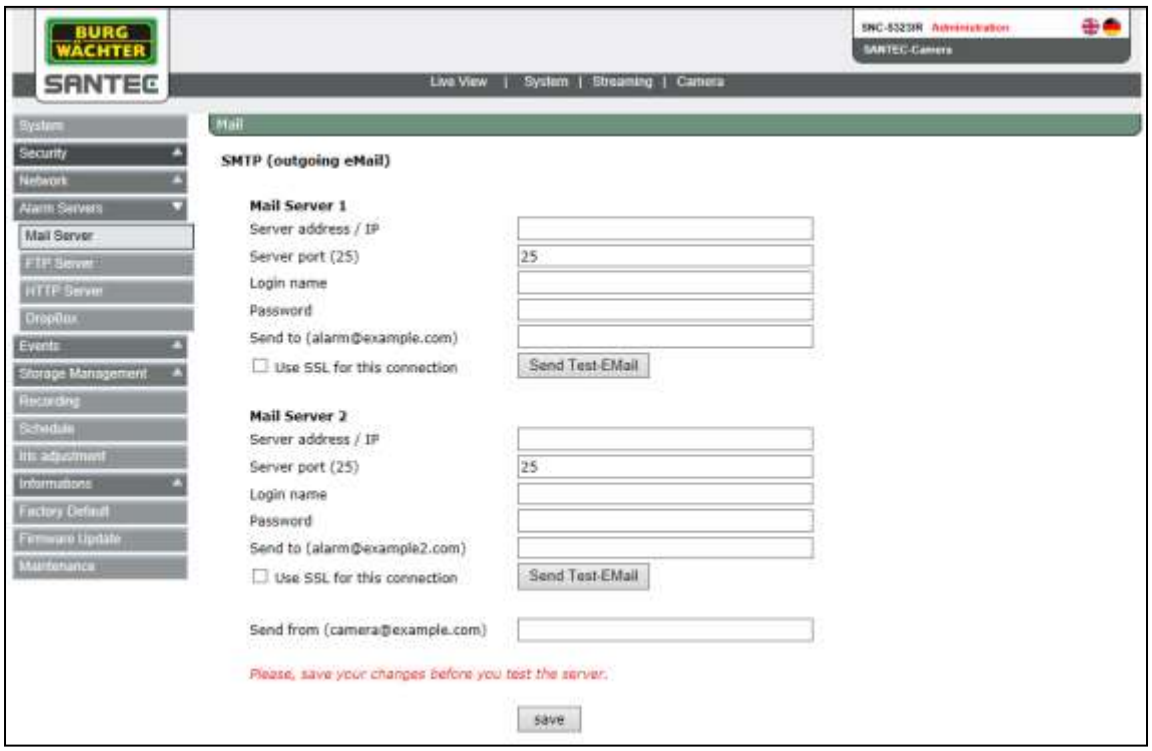
- Friendly name:
  Set the name for the IP camera for identification purposes, e.g. the part number or the area of surveillance (e.g. “gate 1”).

Please also see “Appendix: Install UPnP”.

2.3.4 Alarm server

2.3.4.1 Mail server

The mail server settings can be found under this path:
System > Alarm server > Mail server



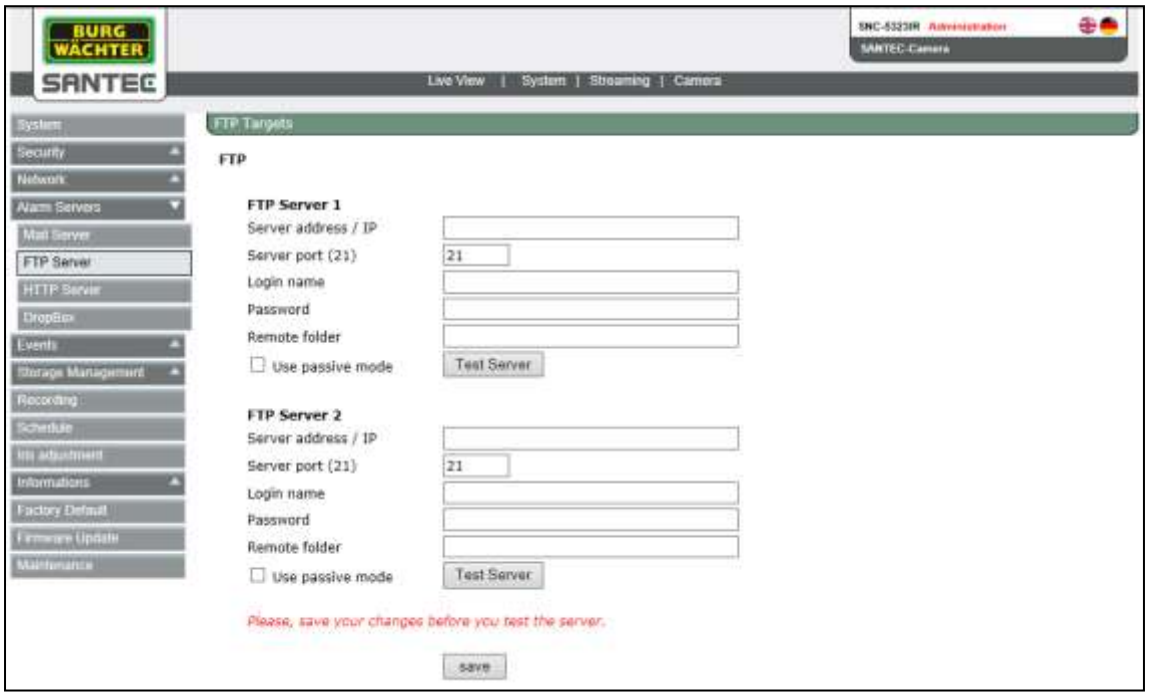
The administrator can send an e-mail via Simple Mail Transfer Protocol (SMTP) when motion is detected. SMTP is a protocol for sending e-mail messages between servers. SMTP is a relatively simple, text-based protocol where one or more recipients of a message are specified and the message text is transferred.

2 sets of SMTP can be configured. Each set includes SMTP server, account name, password and e-mail address settings.
Please contact your network service provider for more specific information on the SMTP server.
Mail server port is set to 25 (default).
Click on <Save>.

Send test e-mail:
The software checks your settings, sends a test e-mail to the defined e-mail address and then provides a short report in case of a failure. If one of the settings is identified to be wrong, this will be displayed in the analysis and hence the search for the error is made easier.
A test e-mail can only be sent if you have saved your settings.

2.3.4.2 FTP Server

The FTP server settings can be found under this path:
System > Alarm Server > FTP Server

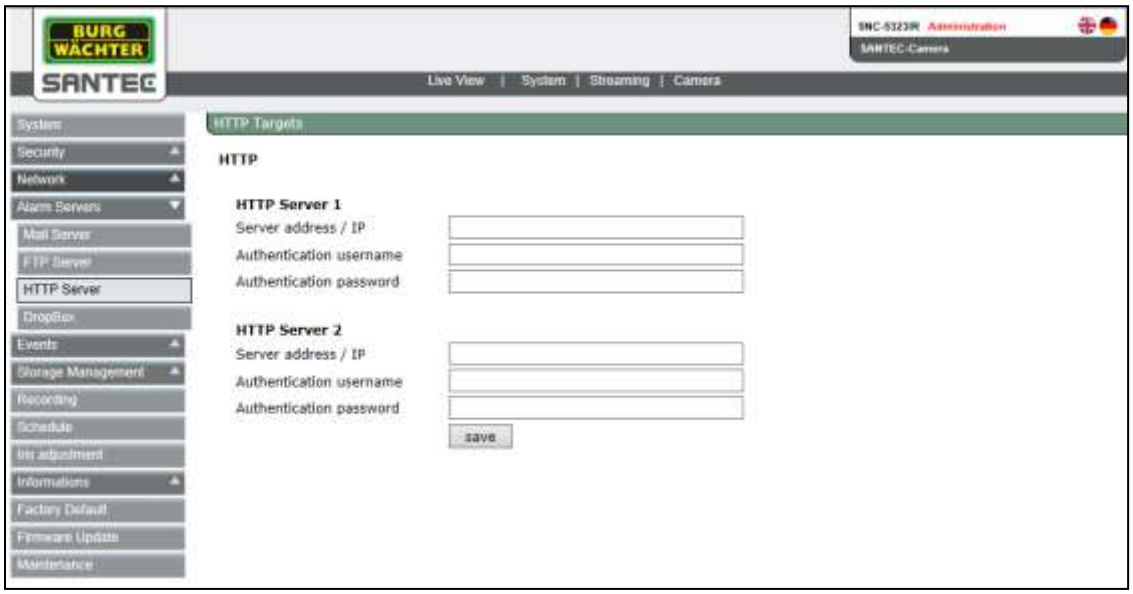


When motion is detected, the administrator can send an alarm message to a specific File Transfer Protocol (FTP) site. Up to two FTP sites can be assigned for the alarm messages. Enter the FTP details which include server, server port, user name, password and remote folder in the respective fields.

Click on <Save>.

2.3.4.3 HTTP Server

The HTTP server settings can be found under this path:
System >Alarm Servers > HTTP Server

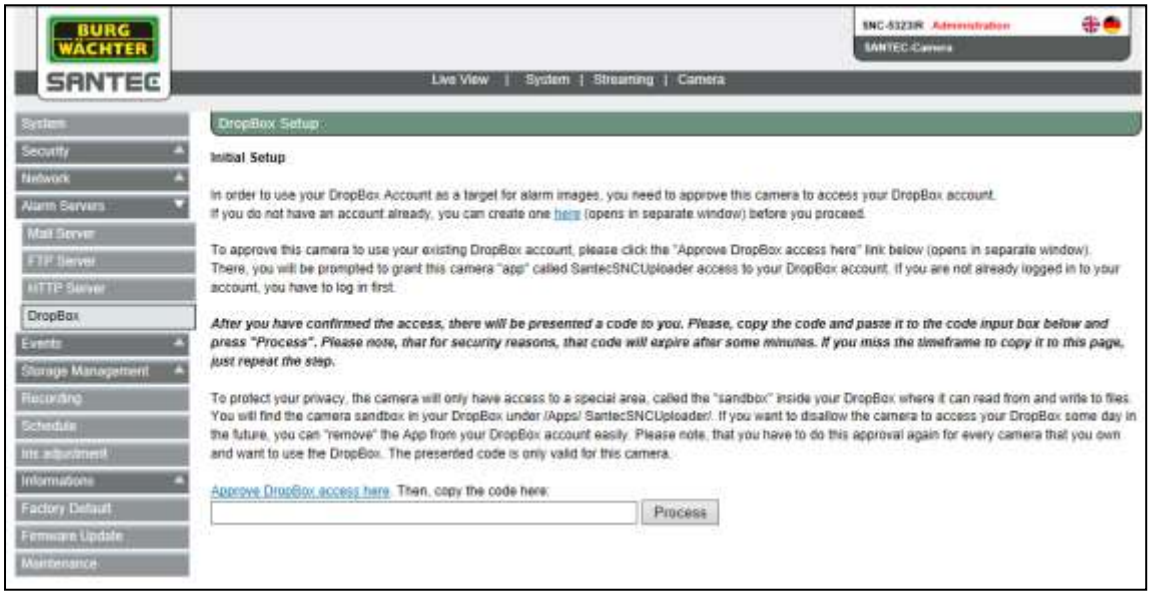


If an event is triggered, a HTTP server can receive notifications from the IP camera.
Enter the HTTP details which include server name (e.g. http://192.168.1.10/alarm.php), user name and password in the respective fields. <Alarm> and <Motion Detection> notifications can be sent to the specified HTTP server.

Click on <Save>.

2.3.4.4 Dropbox

The drop box settings can be found under this path:
System > Alarm server > Dropbox


Live View | System | Streaming | Camera
System
Security
Network
Alarm Servers
Mail Server
FTP Server
HTTP Server
DropBox
Events
Storage Management
Recording
Schedule
Image adjustment
Informations
Factory Default
Firmware Update
Maintenance
DropBox Setup
Initial Setup
In order to use your DropBox Account as a target for alarm images, you need to approve this camera to access your DropBox account.
If you do not have an account already, you can create one here (opens in separate window) before you proceed.
To approve this camera to use your existing DropBox account, please click the "Approve DropBox access here" link below (opens in separate window).
There, you will be prompted to grant this camera "app" called SantecSNCUploader access to your DropBox account. If you are not already logged in to your account, you have to log in first.
After you have confirmed the access, there will be presented a code to you. Please, copy the code and paste it to the code input box below and press "Process". Please note, that for security reasons, that code will expire after some minutes. If you miss the timeframe to copy it to this page, just repeat the step.
To protect your privacy, the camera will only have access to a special area, called the "sandbox" inside your DropBox where it can read from and write to files.
You will find the camera sandbox in your DropBox under /Apps/ SantecSNCUploader/. If you want to disallow the camera to access your DropBox some day in the future, you can "remove" the App from your DropBox account easily. Please note, that you have to do this approval again for every camera that you own and want to use the DropBox. The presented code is only valid for this camera.
Approve DropBox access here. Then, copy the code here:
Process

You can use your Dropbox to store alarm-pictures.
Please read the text displayed in the Dropbox window and follow the here described instructions.

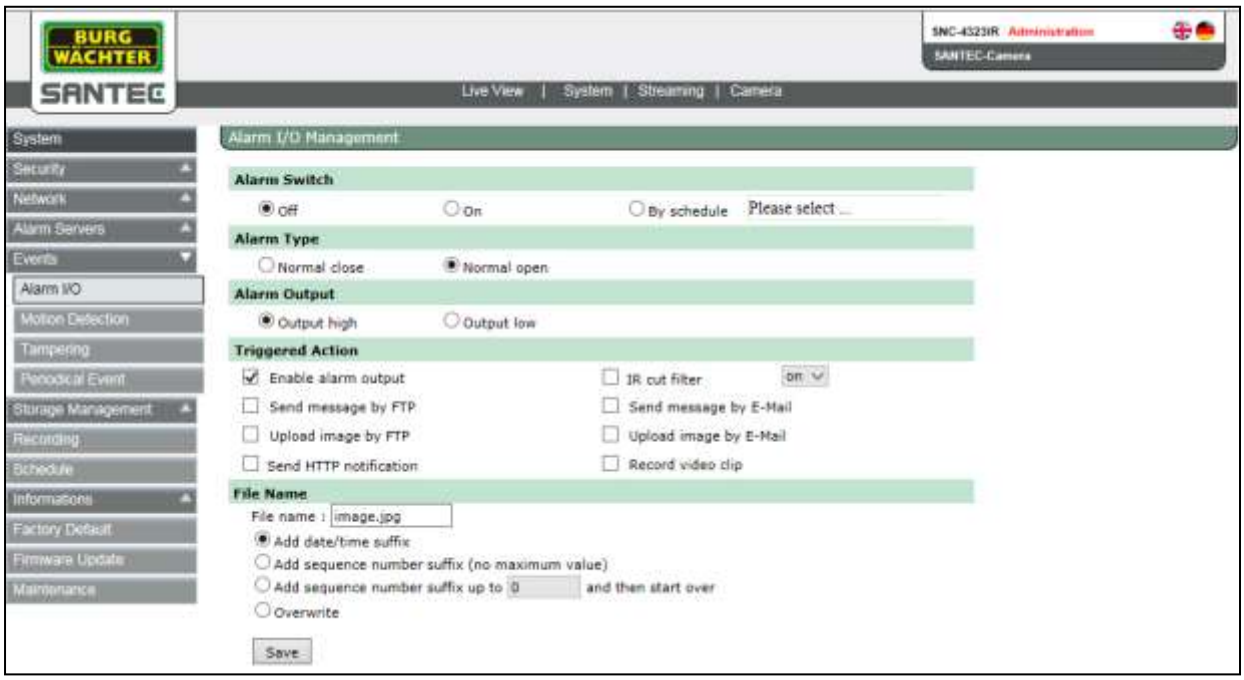
This functionality requires Internet access and, in case of a network without DHCP, a correctly assigned router as well as a DNS server because the camera has to communicate with the external Dropbox server.

Since the stability as well as the latency (which might take up to 1 second per picture) of this server cannot be guaranteed, we recommend to use this function only as an addition to the other functions, e.g. recording to a SD card, NAS, FTP or e-mail.

2.3.5 Events

2.3.5.1 Alarm I/O *(only for models with alarm input/output)*

The alarm IO management settings can be found under this path:
System > Events > Alarm I/O



The IP camera is equipped with one alarm input and one relay output for cooperating with alarm system to capture events' images.
Please also see "Part I, chapter 2.6: Connect alarm I/O".

Alarm switch:
The administrator can enable or disable the alarm function or set it according to schedule. For alarm setting by schedule, this has to be done as described in chapter 2.3.8.

Alarm type:
Select the alarm type, either <Normal close> or <Normal open>.

Alarm output:
Define the alarm output signal, either <high> or <low>.

Triggered action (multiple options):
The administrator can specify alarm actions that will be taken when an alarm is triggered. Options are as follows:

- Enable alarm output
- IR cut filter:
  You can define whether the IR cut filter is enabled or disabled in case of an alarm.

Note:
The IR function cannot be set to <auto> mode if this triggered action is enabled.
Also refer to chapter “2.5.5 IR function” for further details.

- Send alarm message by FTP/e-mail:
  The administrator can select whether to send an alarm message by FTP and/or e-mail when an alarm is triggered.

- Upload image by FTP/e-mail:
  Select this item and the administrator can assign a FTP site or an e-mail address and configure various parameters. When the alarm is triggered, event images will be uploaded to the appointed FTP site or e-mail address.

  The <Pre-trigger buffer> function allows users to check what happened to cause the trigger. The <Pre-trigger buffer> frame rate can be pre-determined.

  The <Post-trigger buffer> allows to store a certain amount of images after the alarm input is triggered.

  Check the box <Continue image upload> to upload the triggered images during certain time or keep uploading until the trigger is off. Select <Upload for … sec> and enter the duration in the field (1-99999). The alarm images are stored on the FTP site. Select <Upload during the trigger active> to make the images keep being uploaded to FTP until the alarm trigger is released. Set the image frequency as the upload frame rate (1-15 frames).

  Note on FTP:
  Make sure the FTP configuration has been completed.
  Also refer to chapter 2.3.4.2 FTP server” for further details.

  Note on e-mail:
  Make sure the SMTP configuration has been completed.
  Also refer to chapter “2.3.4.1 Mail Server” for further details.

- Send HTTP notification:
  Check this item to determine the HTTP address and to specify the parameters for event notifications in case of a triggered alarm. When an alarm is triggered, the notification is sent to the specified HTTP server.

  Example:
  If the custom parameter is set as ”action=1&group=2” and the HTTP server name is ”http://192.168.1.10/alarm.php”, the notification will be sent to HTTP server as ”http://192.168.1.10/alarm.php?action=1&group=2” when an alarm is triggered.

- Record video clip:
  Select this item and the alarm-triggered recording will be stored on the micro SD/SDHC card or via network share.

  The <Pre-trigger buffer> recording function allows users to check what happened to cause the trigger. The pre-trigger buffer time range is from 1 to 9 seconds.

  Select <Upload for … sec> to set the recording duration after alarm is triggered. The setting range is from 1 to 9999 seconds.

  Select <Upload during the trigger active> to record the triggered video until the trigger is off.

  Note:
  Please make sure that a micro SD/SDHC card is inserted into the camera in order to make the recording work.
  Also refer to chapter “2.3.7 Recording” for further details.

File name:
The uploaded image’s file name format can be set in this section. Please select the one that meets your requirements.

- Add date/time suffix:
  File name: imageYYMMDD_HHNNSS_XX.jpg
  Y: Year, M: Month, D: Day
  H: Hour, N: Minute, S: Second
  X: Sequence number

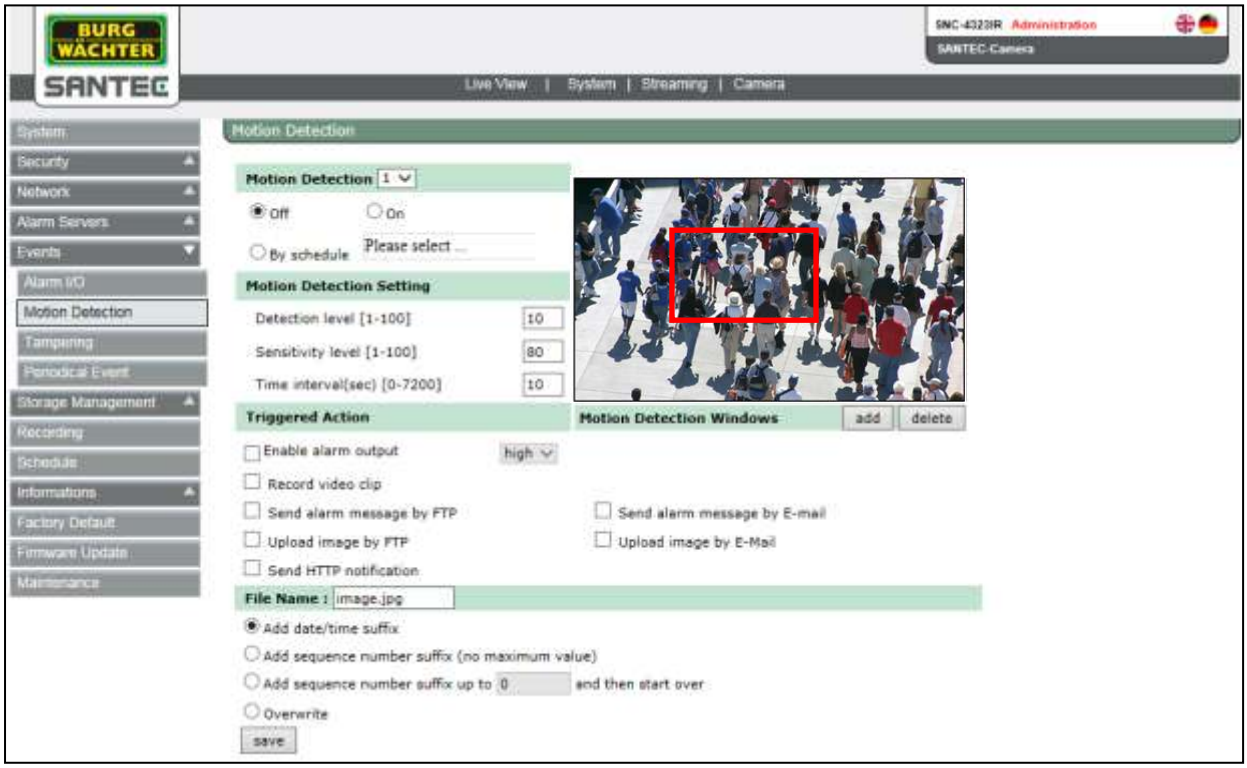
- Add sequence number suffix:
  File name: imageXXXXXXX.jpg
  X: Sequence number

- Overwrite:
  The original image in the FTP site will be overwritten by the newly uploaded file with a static file name.

Save:
After you have completed all the settings mentioned above, please click on the <Save> button to save all the settings in this page.

2.3.5.2 Motion detection

The motion detection settings can be found under this path:
System > Events > Motion Detection



The motion detection function allows detecting motion and triggering alarms when the motion volume in the detected area reaches/exceeds the determined sensitivity threshold value.

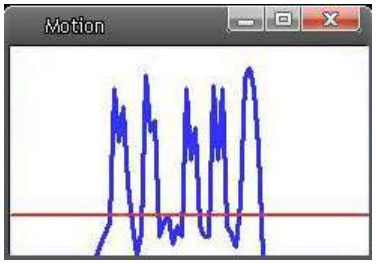
On the motion detection setting page, there is a frame (=motion detection window) displayed on the live video pane. The motion detection window is for defining the motion detection area. To change the size of the motion detection window, move the mouse cursor to the edge of the frame and draw it outward/inward. Moving the mouse to the center of the frame can shift the frame to the intended position.

If you want to use motion detection “by schedule”, please define the schedule as described in chapter 2.3.8.

Up to 10 motion detection windows can be set.
Click on the <Add> button under the live video pane to add a motion detection window.
To cancel a motion detection window, move the mouse cursor to the selected window and click on the <Delete> button.

If the motion detection function is activated, a window (motion) with indication of motion will be shown.

When motion is detected, the signals will be displayed on the motion window as shown below.



Motion detection:
Users are able to turn on/off motion detection or set it “by schedule”.
If you select “by schedule”, alarm settings have to be defined according to chapter 2.3.8.

Motion detection setting:
Users can adjust the following parameters of motion detection:

- Detection level [1-100]:
  The default level is 10.
  Here you can adjust the sensitivity regarding changes in the picture (pixel changes).
  The higher the value, the non-sensitive the detection becomes, e.g. against noise.

- Sensitivity level [1-100]:
  The default level is 80 which means if 20% or more sampling pixels are detected differently, the system will detect motion. The bigger the value, the more sensitive it is. Meanwhile, when the value is bigger, the red horizontal line in the motion indication window will be lower accordingly.
  All fields sum-up to max. 100.

- Time interval (sec) [0-7200]:
  The default interval is 10. The value is the interval between each detected motion. Within this interval, a second motion alarm is not triggered.

Triggered action (multiple options):
The administrator can specify alarm actions that will be taken when motion is detected. Options are as follows:

- Enable alarm output:
  Activate this item and select “high” or “low” to enable the alarm relay output when motion is detected.

- Record video clip:
  Select this item and the motion detection recording will be stored on the micro SD/ SDHC card or via network share when motion is detected.

  Pre-trigger buffer recording function allows users to check what happened to cause the trigger. The pre-trigger buffer time range is from 1 to 9 seconds.

  Select <Upload for … sec> to set the recording duration after motion event occurs. The setting range is from 1 to 9999 seconds.

  Select <Upload during the trigger active> to record the triggered video until the trigger is off.

  Note:
  Please make sure that a micro SD/SDHC card is inserted into the camera in order to make the recording work.
  Also refer to chapter “2.3.7 Recording” for further details.

- Send alarm message by FTP/e-mail:
  The administrator can select whether to send warning messages by FTP and/or e-mail when motion is detected.

- Upload image by FTP/e-mail:
  Select this item and the administrator can assign a FTP site or an e-mail address and configure various parameters. When motion is detected, event images will be uploaded to the appointed FTP site or e-mail address.

  <Pre-trigger buffer> function allows users to check what happened to cause the trigger. The <Pre-trigger buffer> frame rate can be pre-determined.

  <Post-trigger buffer> allows the users to upload certain amount of images after motion event occurs.

  Check the box <Continue image upload> to upload the triggered images during certain time or keep uploading until the trigger is off. Select <Upload for … sec> and enter the duration in the field (1-99999). The alarm images are stored on the FTP site. Select <Upload during the trigger active> to make the images keep being uploaded to FTP until the alarm trigger is released. Set the image frequency as the upload frame rate (1-15 frames).

  Note on FTP:
  Make sure the FTP configuration has been completed.
  Also refer to chapter “2.3.4.2 FTP Server” for further details.

Note on e-mail:
Make sure the SMTP configuration has been completed.
Also refer to chapter “2.3.4.1 Mail Server” for further details.

- Send HTTP notification:
  Check this item to determine the HTTP address and to specify the parameters for event notifications in case of a triggered alarm. When an alarm is triggered, the notification is sent to the specified HTTP server.

  Example:
  If the custom parameter is set as ”action=1&group=2” and the HTTP server name is ”http://192.168.1.10/alarm.php”, the notification will be sent to HTTP server as ”http://192.168.1.10/alarm.php?action=1&group=2” when an alarm is triggered.

File name:
The uploaded image’s file name format can be set in this section. Please select the one that meets your requirements.

- Add date/time suffix:
  File name: imageYYMMDD_HHNNSS_XX.jpg
  Y: Year, M: Month, D: Day
  H: Hour, N: Minute, S: Second
  X: Sequence number

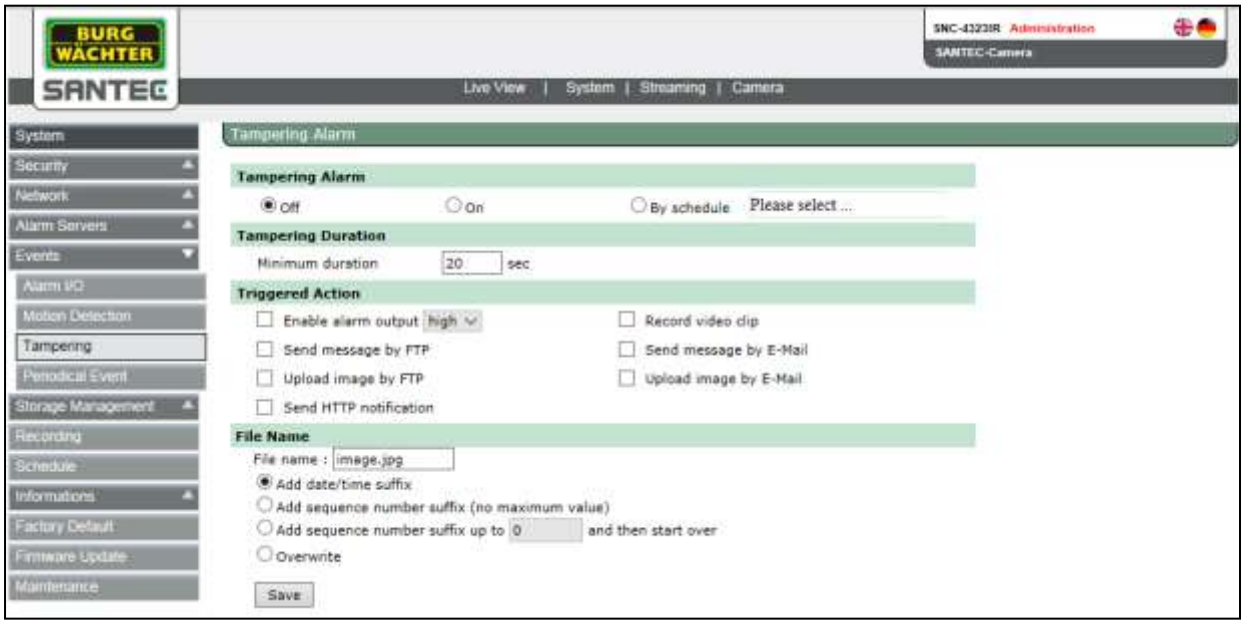
- Add sequence number suffix:
  File name: imageXXXXXXX.jpg
  X: Sequence number

- Overwrite:
  The original image in the FTP site will be overwritten by the newly uploaded file with a static file name.

Save:
After you have completed all the settings mentioned above, please click on the <Save> button to save all the settings in this page.

2.3.5.3 Tampering

The tampering settings can be found under this path: **System > Events > Tampering**



The tempering alarm function protects the IP camera against tampering – such as deliberate redirection, blocking, paint spray and lens cover etc. In case of any sabotage action, a notification or a snapshot is sent to the specified recipient.

Detection of camera tampering is achieved by measuring the differences between the older frames of video (which are stored in buffers) and more recent frames.

Tampering alarm:
Users are able to turn on/off the tampering alarm function.
If you select “by schedule”, alarm settings have to be defined according to chapter 2.3.8.

Tampering duration:
Minimum tampering duration is the time for video analysis to determine whether camera tampering has occurred. Minimum duration could also be interpreted as defining the tampering threshold; longer duration represents higher threshold. Settable tampering duration time range is from 10 to 3600 seconds. The default value is 20 seconds.

Triggered action (multiple options):
The administrator can specify alarm actions that will be taken when tampering is detected. Options are as follows:

- Enable alarm output:
  Activate this item and select “high” or “low” to enable the alarm relay output when tampering is detected.

- Record video clip:
  Select this item and the tampering alarm recording will be stored on the micro SD/ SDHC card or via network share when tampering is detected.

  Pre-trigger buffer recording function allows users to check what happened to cause the trigger. The pre-trigger buffer time range is from 1 to 9 seconds.

  Select <Upload for … sec> to set the recording duration after tampering occurs. The setting range is from 1 to 9999 seconds.

  Select <Upload during the trigger active> to record the triggered video until the trigger is off.

  Note:
  Please make sure that a micro SD/SDHC card is inserted into the camera in order to make the recording work.
  Also refer to chapter “2.3.7 Recording” for further details.

- Send alarm message by FTP/e-mail:
  The administrator can select whether to send an alarm message by FTP and/or e-mail when tampering is detected.

- Upload image by FTP/e-mail:
  Select this item and the administrator can assign a FTP site or an e-mail address and configure various parameters. When tampering is detected, event images will be uploaded to the appointed FTP site or e-mail address.

  <Pre-trigger buffer> function allows users to check what happened to cause the trigger. The <Pre-trigger buffer> frame rate could be pre-determined.

  <Post-trigger buffer> is for users to upload certain amount of images after tampering is triggered.

  Check the box <Continue image upload> to upload the triggered images during certain time or keep uploading until the trigger is off. Select <Upload for … sec> and enter the duration in the field (1-99999). The alarm images are stored on the FTP site. Select <Upload during the trigger active> to make the images keep being uploaded to FTP until the alarm trigger is released. Set the image frequency as the upload frame rate (1-15 frames).

  Note on FTP:
  Make sure the FTP configuration has been completed.
  Also refer to chapter “2.3.4.2 FTP Server” for further details.

Note on e-mail:
Make sure the SMTP configuration has been completed.
Also refer to chapter “2.3.4.1 Mail Server” for further details.

- Send HTTP notification:
  Check this item to determine the HTTP address and to specify the parameters for event notifications in case of a triggered alarm. When an alarm is triggered, the notification is sent to the specified HTTP server.

- Example:
  If the custom parameter is set as ”action=1&group=2” and the HTTP server name is ”http://192.168.1.10/alarm.php”, the notification will be sent to HTTP server as ”http://192.168.1.10/alarm.php?action=1&group=2” when an alarm is triggered.

File name:
The uploaded image’s file name format can be set in this section. Please select the one that meets your requirements.

- Add date/time suffix:
  File name: imageYYMMDD_HHNNSS_XX.jpg
  Y: Year, M: Month, D: Day
  H: Hour, N: Minute, S: Second
  X: Sequence number

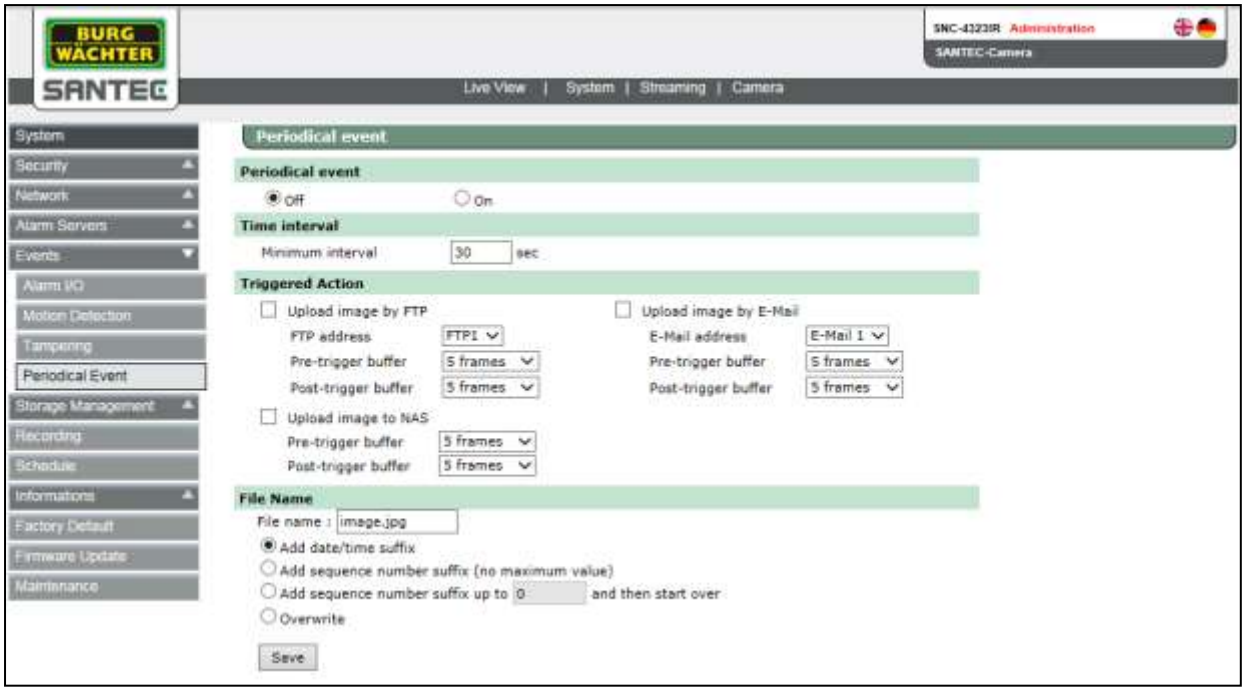
- Add sequence number suffix:
  File name: imageXXXXXXX.jpg
  X: Sequence number

- Overwrite:
  The original image in the FTP site will be overwritten by the newly uploaded file with a static file name.

Save:
After you have completed all the settings mentioned above, please click on the <Save> button to save all the settings in this page.

2.3.5.4 Periodical event

These settings can be found under this path: **System > Event >Periodical event**



The camera is able to store period JPEG files. This is a kind of time lapse function which might be useful when monitoring e.g. for construction sites, webcams or weather cams. These files will be stored on either a FTP server, NAS or sent as an e-mail notification. It is necessary to define one camera stream to MJPEG stream. Since the camera has an integrated FTP server, it can be used to store the JPEG files to the SD card (optionally available).

- Enable the function “Periodic event”.
- Define the interval to take the pictures (30 – 3600 seconds).
- Define the triggered action, i.e. how/where the picture files are to be stored (FTP, NAS or e-mail notification).
- File name:
  Define a file name:
  - Add date/time suffix:
    File name: imageYYMMDD_HHNNSS_XX.jpg
    Y: Year, M: Month, D: Day
    H: Hour, N: Minute, S: Second
    X: Sequence number
  - Add sequence number suffix:
    File name: imageXXXXXXX.jpg
    X: Sequence number
  - Overwrite:
    The original image in the FTP site will be overwritten by the newly uploaded file with a static file name.

Click on the <Save> button to save all the settings in this page.

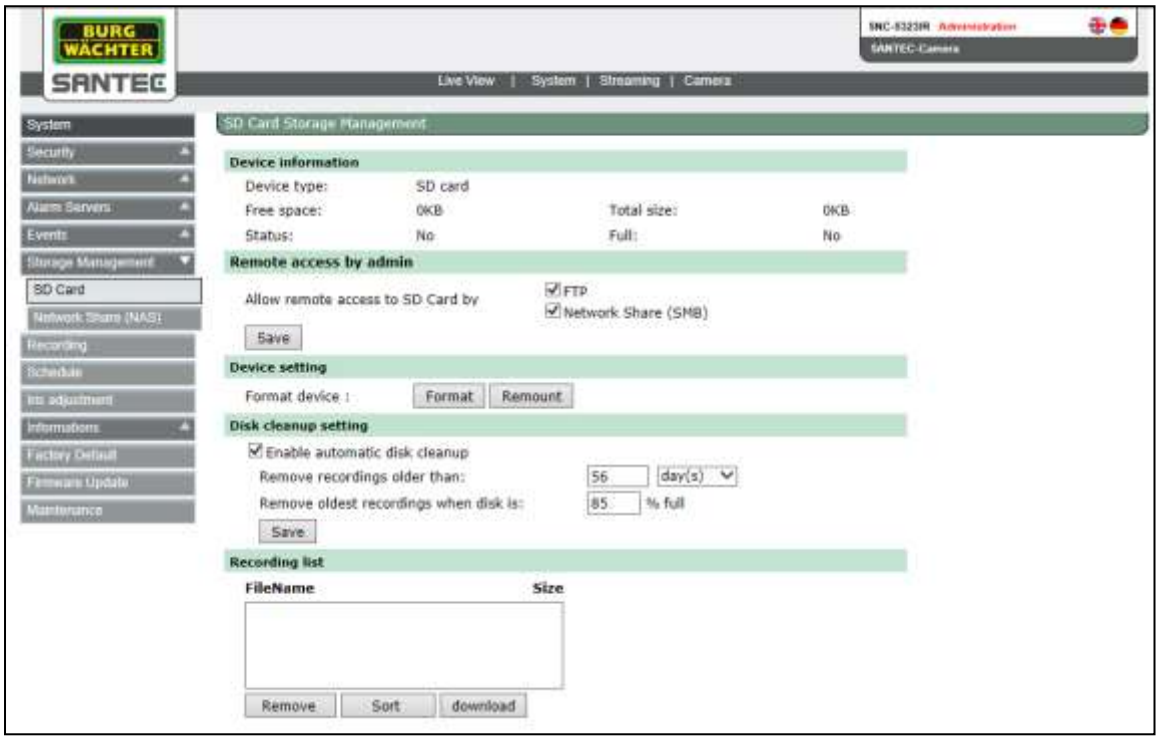
Note:
Using the OpenSource tool SANTEC AVI-Producer, these individual pictures can be consolidated to a video (AVI Format).
This software is also available as LGPL in C# Source Code and is thus available for personal modifications/adjustments.

The SANTEC AVI-Producer is available for download in the SANTEC webshop:
www.santec-video.com/downloads_software

2.3.6 Storage management

2.3.6.1 SD card

These settings can be found under this path: **System > Storage management > SD card**



You can save up to 32 GB of recordings onto a suitable micro SD/SDHC card.
This page shows the capacity information of the micro SD card and a recording list with all the recording files saved on the memory card. Users can also format the SD card and implement automatic recording cleanup through the setting page.

To implement micro SD card recording, please also read chapter “2.3.9 Recording”.

Note:
Please format the micro SD/SDHC card when using for the first time. Formatting will also be required when a memory card already being used on one camera and later transferred to another camera with different software platform.

Device information:
When users insert the micro SD/SDHC card, the card information such as the memory capacity and status will be shown at device information section.
If the SD card is successfully installed, its status could be confirmed with “Yes” under <Device information>.

Remote access by admin:
Here you can define whether you allow remote access to the SD card by FTP or by SMB (network share).

Only the “admin” user is allowed to download the video data from the SD card, provided this option has been enabled. Authorisation is done using the same password as for the web interface.

- Access via FTP:
  The admin user can download video files from the SD card using a standard FTP client (e.g. Filezilla or a console FTP).
- Access via SMB (network share):
  The admin user can download video files from the SD card using a network share. The camera’s SD card can even be used as a network share. Just enter the camera’s IP in the Windows Explorer. Example: \\192.168.1.168\

Device setting:
- Format:
  Click on the <Format> button to format the memory card.
- Remount
  Click on the <Remount> button if the SD card is changed while the camera is running of if the SD card is used for the first time, so that the SD card is initialized.

Disk cleanup setting:
Users can enable automatic recordings cleanup by specifying the time and storage limits.

Recording list:
Each video file on the micro SD/SDHC card will be listed in the recording list as shown below. The maximum file size is 60 MB (60 MB per file).

If the recording mode is set to “Always” (see next chapter) and the micro SD/ SDHC card recording is also enabled, occurring events will be recorded to the memory card.

- Remove:
  To remove a file, select the file first and then click on the <Remove> button.

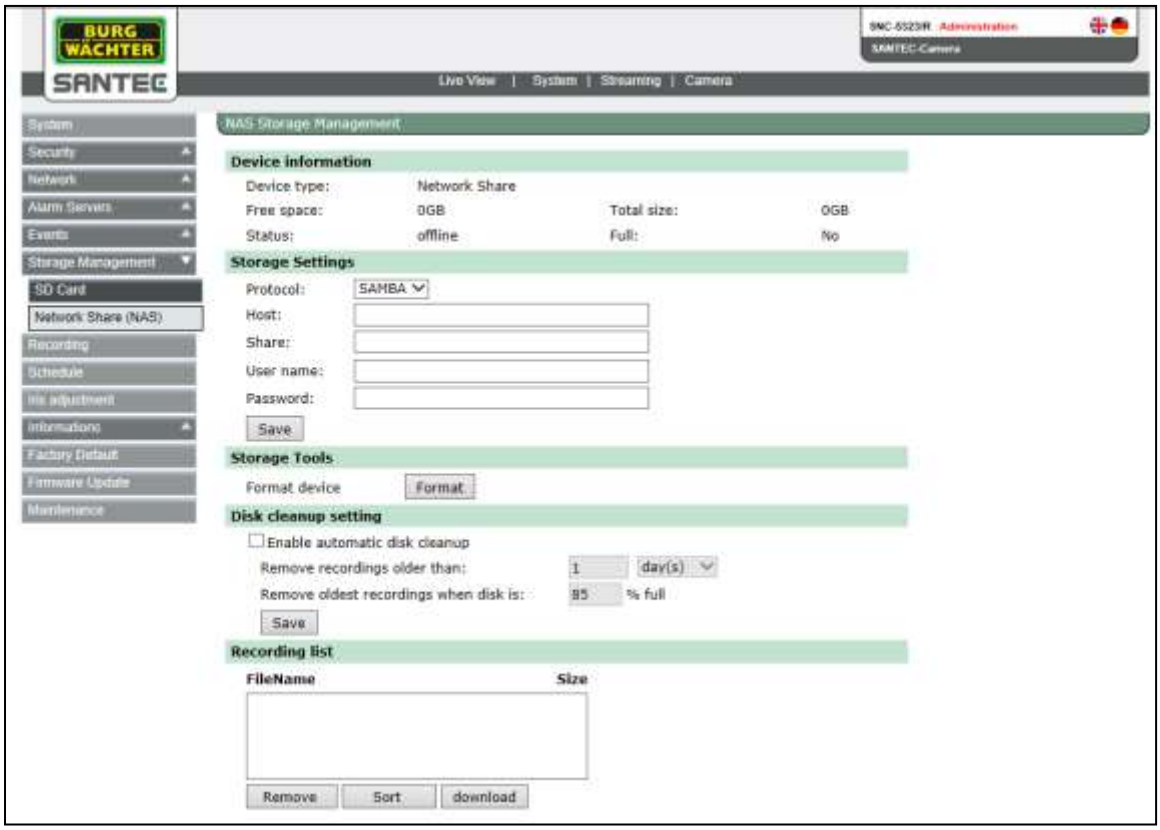
- Sort:
  Click on the <Sort> button and the files in the recording list will be listed by name and date order.

Note:
The capital letter A/M/R/T appears in the very beginning of name denoting the sort of the recording:
A = Alarm
M = Motion
R = Regular Recording
T = Tampering

- Download:
  To open/download a video clip, select the file first and then click on the <Download> button below the recording list field. The selected file window will pop up. Click on the AVI file to directly play the video in the player or download it to a specified location.

2.3.6.2 Network share (NAS)

These settings can be found under this path:
System > Storage management > Network share



On this page, you can define a NAS server or enable Windows. The camera can store videos here (similar to a SD card).

Storage settings:

- Protocol: Only „Samba“ is available for the time being.
- Host: IP or host name of the NAS server or the Windows computer.
- Share: Share name on server. The camera creates a sub-folder in the share folder. This folder is called „Camera model MAC address“, e.g. „SNC-3302-001E44010203“. In this sub-folder, all recordings are stored in order to separate them from recordings from other cameras which use the same share.
- User name, password: User name and password for share access (as created in the server). The user has to have reading and writing authority.

Storage tools:

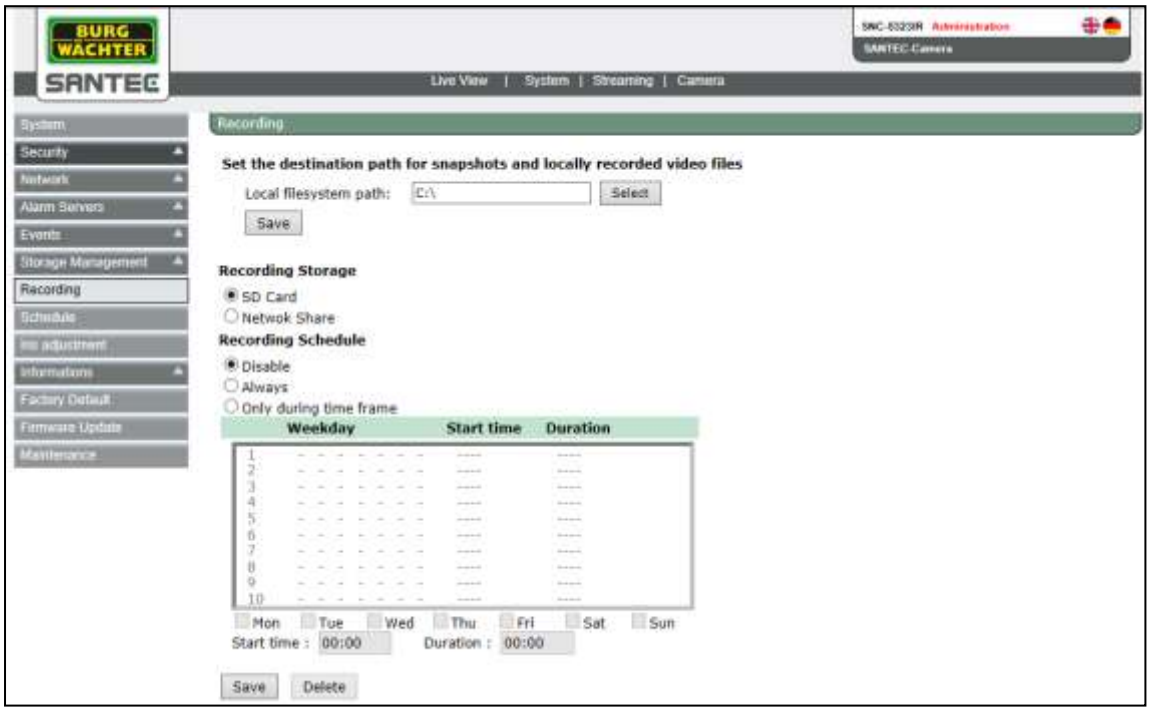
- Format device: All camera data are deleted within share (see above).

Disk cleanup setting:
This is a ring storage. Deletes the oldest video to make space according to configured days or if the share has less space than a specified percentage (similiar to a SD card).

Recording list: Same as for SD card.

2.3.7 Recording

The recording settings can be found under this path: **System > Recording**



On the recording setting page, users can specify the recording schedule.

Two types of schedule mode are offered: “Always” and “Only during time frame”:

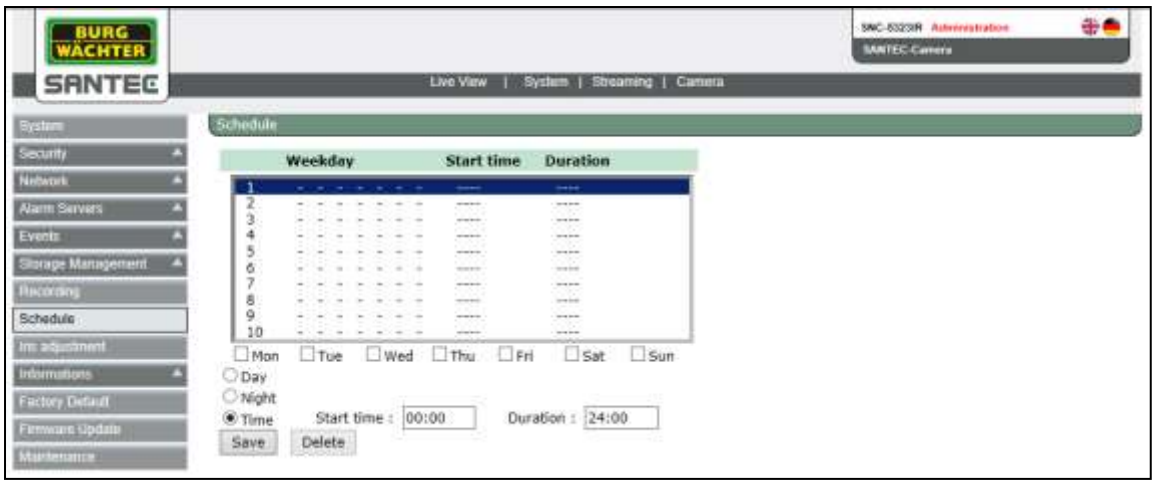
- “Always”:
  Recording is done to the SD/SDHC card at all times.
- “Only during time frame”:
  Here you can define a day, a start time and a duration.

Please click on the <Save> button for confirming the schedule mode.

Select <Disable> to terminate the recording function.

2.3.8 Schedule

This setting can be found under this path: **System > Schedule**



If you want to define a schedule for alarm management via I/O contact, motion detection, camera profile or tampering, you can define days and times on this page.

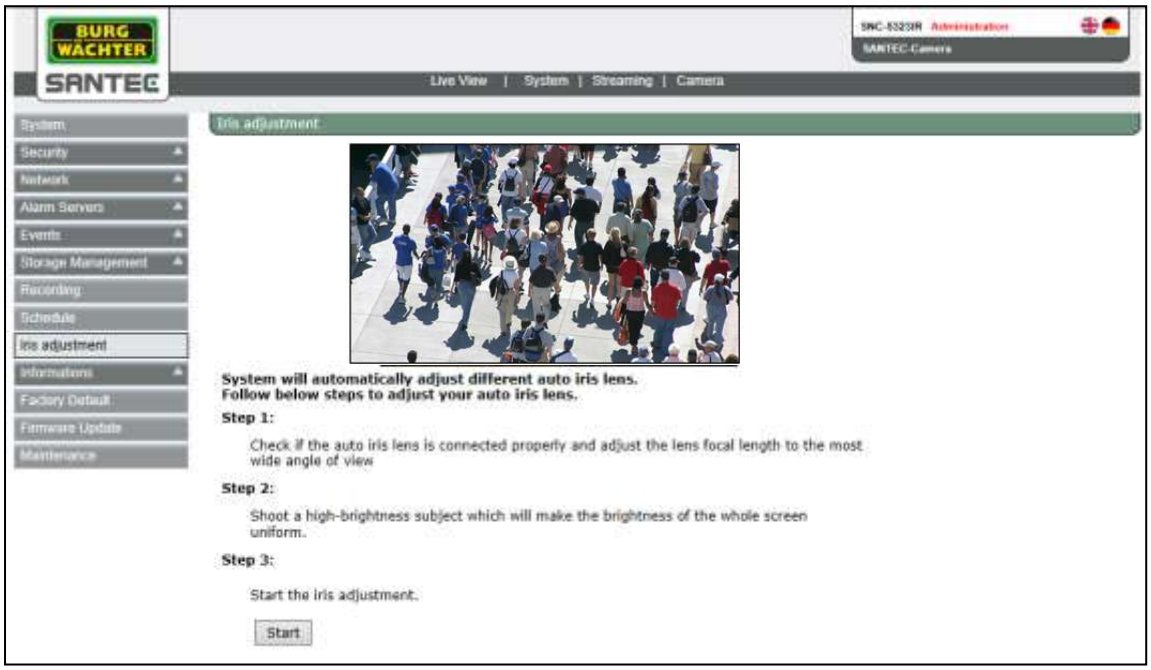
For the schedule, a start time and an end time can be set or activated automatically when the camera switches into day resp. night mode.

Up to 10 schedules can be defined for alarm I/O, motion detection, camera profile and tampering.

Only if you have defined at least one schedule on this page, you can select a schedule on the respective event pages. Please also read chapter 2.3.5.1 (alarm IO), chapter 2.3.5.2 (motion detection), chapter 2.3.5.3 (tampering) and chapter 2.5.1 (camera profile).

2.3.9 Iris adjustment *(only for models with DC-controlled lens)*

The iris adjustment settings can be found under this path: **System > Iris adjustment**



If you use an auto-iris lens and you need to make adjustments to it, please follow the three steps indicated on this page (also see above screenshot), that is:

Step 1:
Check if the auto-iris lens is connected properly and adjust the focal length to the widest angle of view.

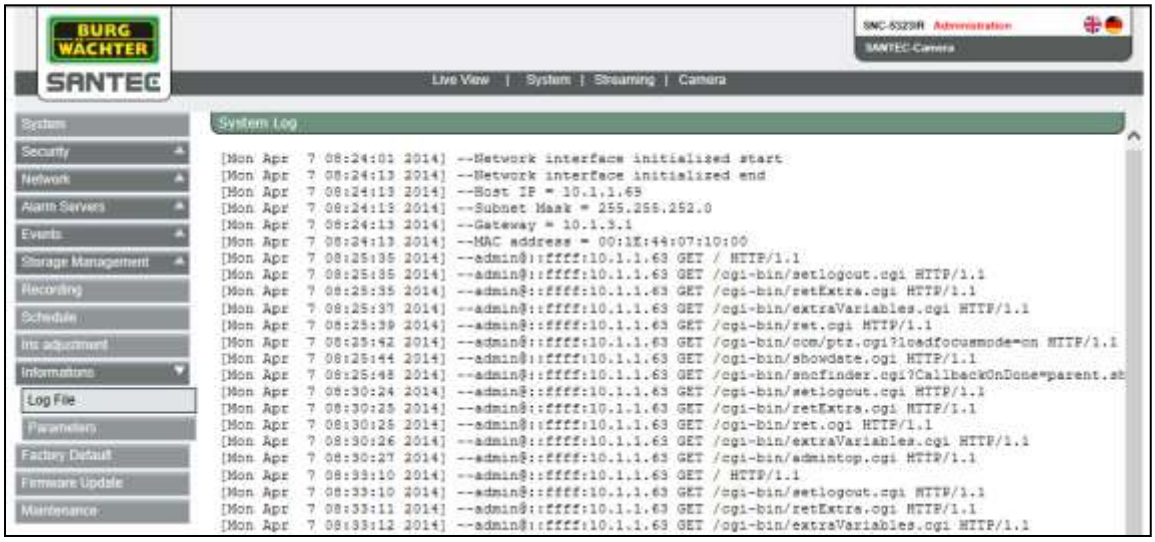
Step 2:
Shoot an object of high brightness which will make the brightness of the whole scene uniform.

Step 3:
Start the iris adjustment by clicking on the <Start> button.

2.3.10 Information

2.3.10.1 Log file

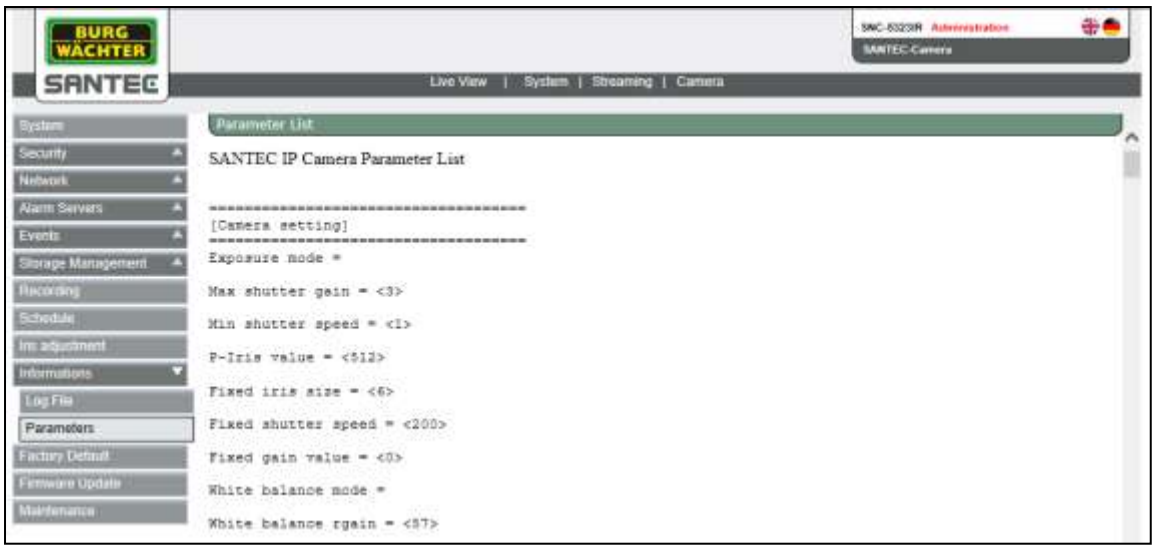
The view log file function can be found under this path:
System > Information > Log file


Live View | System | Streaming | Camera
System
Security
Network
Alarm Servers
Events
Storage Management
Recording
Schedule
Iris adjustment
Information
Log File
Parameters
Factory Default
Firmware Update
Maintenance
System Log
[Mon Apr 7 08:24:01 2014] --Network interface initialized start
[Mon Apr 7 08:24:13 2014] --Network interface initialized end
[Mon Apr 7 08:24:13 2014] --Host IP = 10.1.1.69
[Mon Apr 7 08:24:13 2014] --Subnet Mask = 255.255.252.0
[Mon Apr 7 08:24:13 2014] --Gateway = 10.1.3.1
[Mon Apr 7 08:24:13 2014] --MAC address = 00:1E:44:07:10:00
[Mon Apr 7 08:25:35 2014] --admin@::ffff:10.1.1.63 GET / HTTP/1.1
[Mon Apr 7 08:25:35 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/setlogout.cgi HTTP/1.1
[Mon Apr 7 08:25:35 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/retExtra.cgi HTTP/1.1
[Mon Apr 7 08:25:37 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/extraVariables.cgi HTTP/1.1
[Mon Apr 7 08:25:39 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/ret.cgi HTTP/1.1
[Mon Apr 7 08:25:42 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/com/ptz.cgi?loadfocusmode=on HTTP/1.1
[Mon Apr 7 08:25:44 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/showdate.cgi HTTP/1.1
[Mon Apr 7 08:25:48 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/sncfinder.cgi?CallbackOnDone=parent.st
[Mon Apr 7 08:30:24 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/setlogout.cgi HTTP/1.1
[Mon Apr 7 08:30:25 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/retExtra.cgi HTTP/1.1
[Mon Apr 7 08:30:25 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/ret.cgi HTTP/1.1
[Mon Apr 7 08:30:26 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/extraVariables.cgi HTTP/1.1
[Mon Apr 7 08:30:27 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/admintop.cgi HTTP/1.1
[Mon Apr 7 08:33:10 2014] --admin@::ffff:10.1.1.63 GET / HTTP/1.1
[Mon Apr 7 08:33:10 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/setlogout.cgi HTTP/1.1
[Mon Apr 7 08:33:11 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/retExtra.cgi HTTP/1.1
[Mon Apr 7 08:33:12 2014] --admin@::ffff:10.1.1.63 GET /cgi-bin/extraVariables.cgi HTTP/1.1

Here you can view the system log file. The content of the file provides useful information about connections after system boot-up.

2.3.10.2 Parameter

The parameters can be found under this path: **System > Information > Parameter**

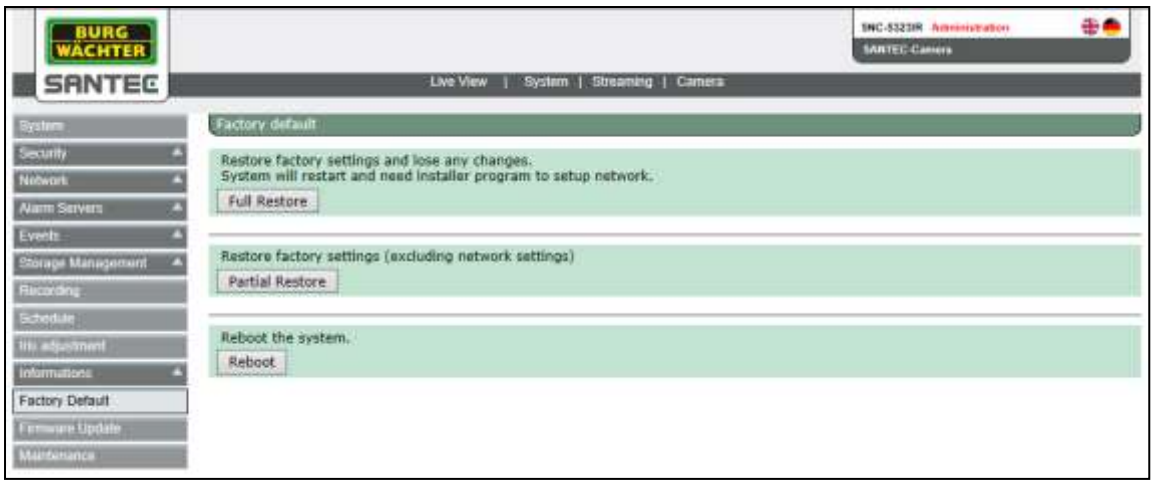


On this page, the parameter of the connected IP camera are listed.

Please keep this page at hand for any support questions.

2.3.11 Factory default

The factory default settings can be found under this path: **System > Factory default**



Users can follow the instructions on this page to reset the IP camera to factory default setting if needed.

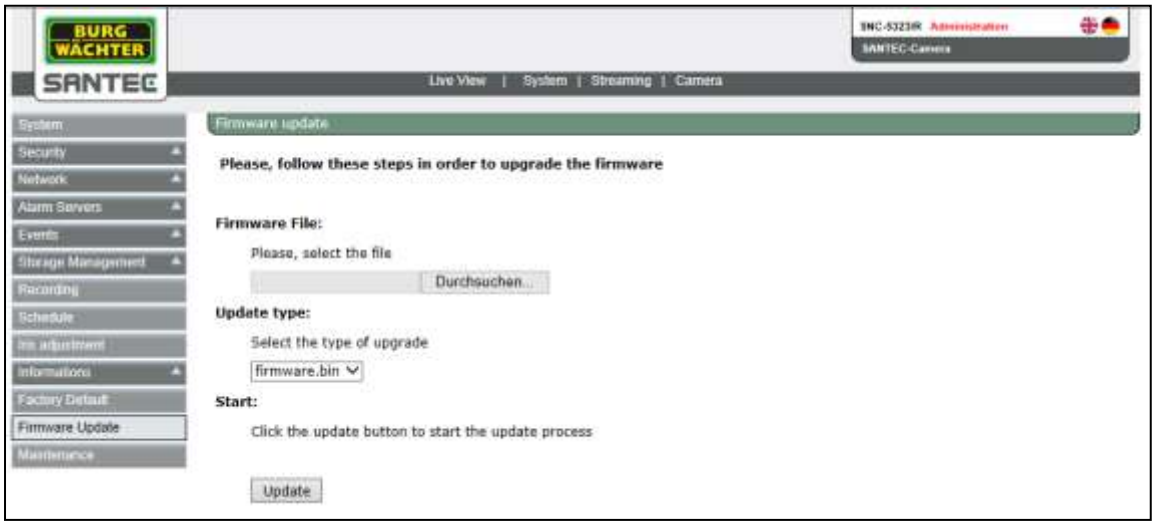
Full/partial restore:
Click on the <Full restore> or <Partial restore> button to recall the factory default settings. The system will restart in 30 seconds.

Note:
The IP address will be restored to default.

Reboot:
Click on the <Reboot> button and the system will restart without changing current settings.

2.3.12 Firmware update

The software upgrade settings can be found under this path: **System > Firmware update**



Make sure the upgrade software file is available before carrying out software upgrade.

The procedure of software upgrade is as follows:

1. Click on <Browse> and select the file to be uploaded.
   Note: Do not change the upgrade file name or the system will fail to find the file.
2. Click on <Update>. The system checks if the upgrade file exists. The upgrade process is then started. This may take a while. At 100%, the upgrade process is completed. The camera is now updated with the latest version and it automatically reboots.

   We recommend to restore the camera to factory default settings. Go to chapter 2.3.11 for <Factory default>.

2.3.13 Maintenance

The maintenance settings can be found under this path: **System > Maintenance**

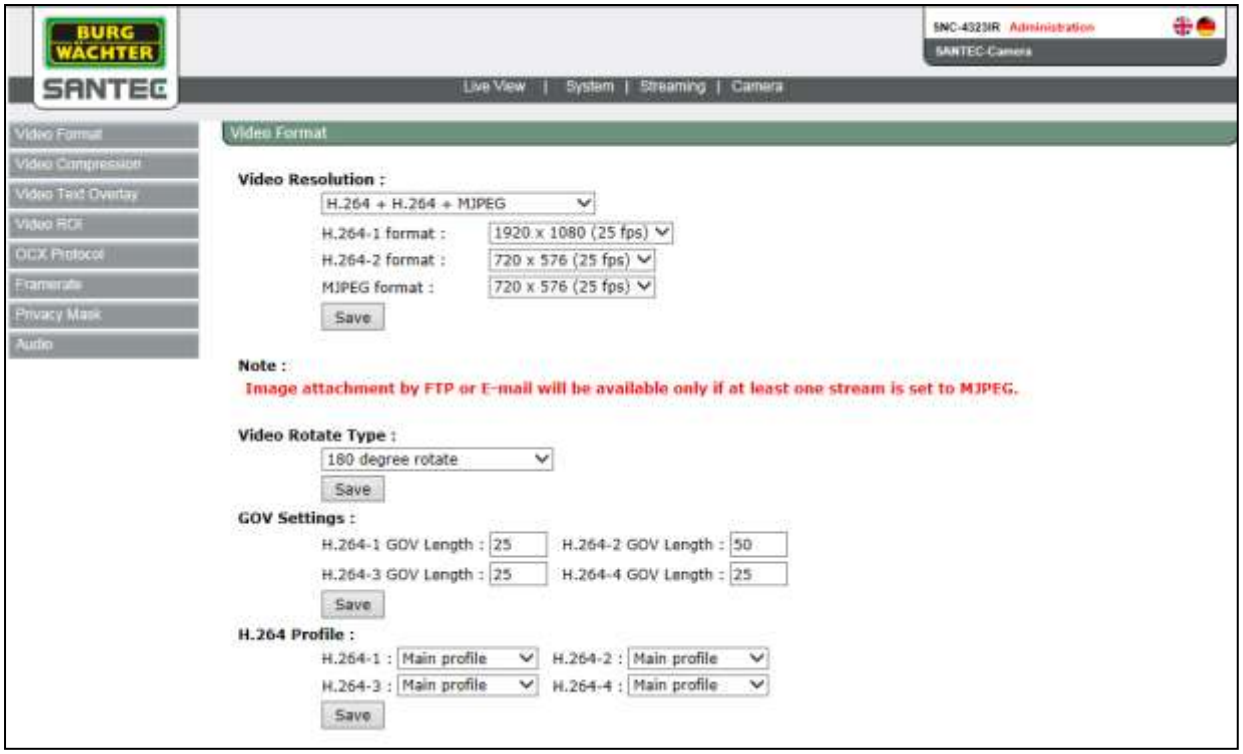
The current camera configurations can be downloaded as a file.

To restore the camera configurations, the file can be uploaded again.

2.4 Streaming

2.4.1 Video format

The video format setting can be found under this path: **Streaming > Video format**



Video resolution:
In the video resolution section, the available formats are MJPEG and H.264.
For MJPEG, max. 1080p are available, even if the camera supports a higher resolution.
Click on <Save> to confirm the setting.

Note:
Attaching pictures via FTP or e-mail is only possible if at least one stream is set to MJPEG.

Video rotate type:
Users can change the video display type if necessary. Selectable video rotate types:

- Normal
- Flip (vertical)
- Mirror (horizontal)
- 90 degree clockwise
- 180 degree rotate
- 90 degree counterclockwise

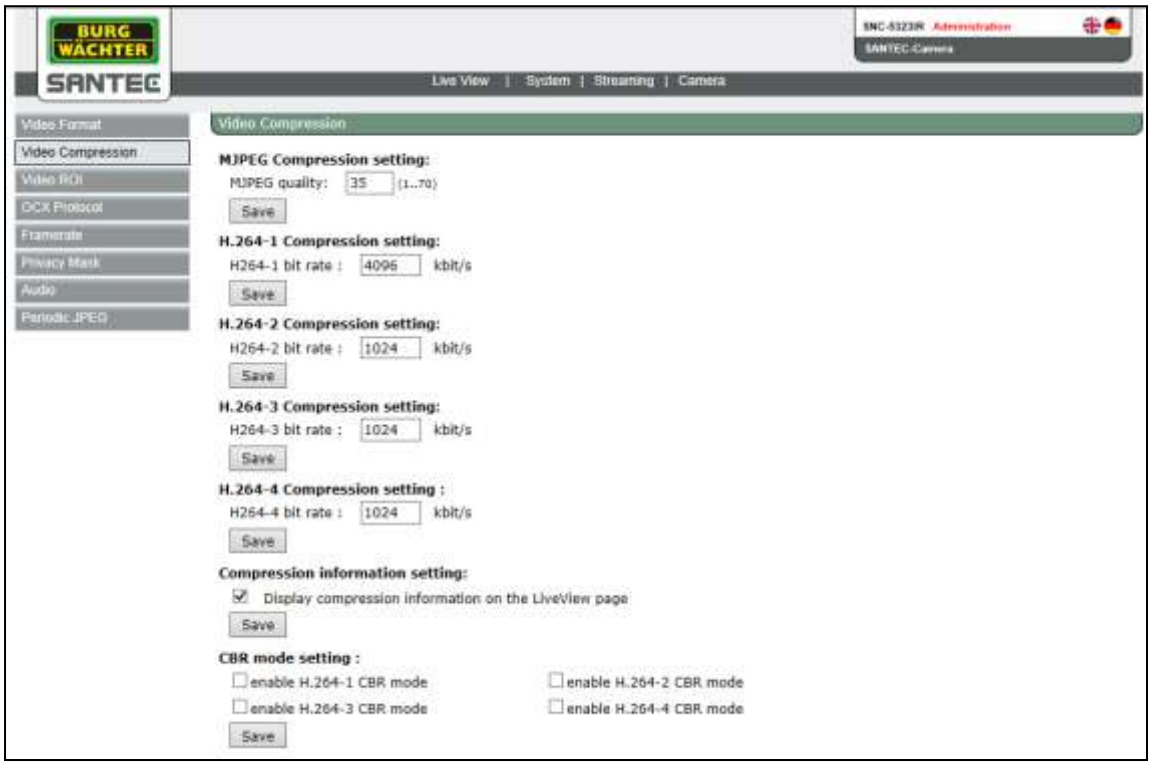
Click on <Save> to confirm the setting.

GOV settings:
Users can set the GOV length to determine the frame structure (I-frames and P-frames) in a video stream for saving bandwidth. The setting range is from 2 to 64. Default value is 25 which means there is one I-frame every 25 frames. Longer GOV length means lower I-frame frequency.
Click on <Save> to confirm the GOV setting.

H.264 profile:
Here you can choose between different H.264 profiles.

2.4.2 Video compression

The video compression setting can be found under this path:
Streaming > Video compression



Depending on the application, you can select a MJPEG or H.264 compression.

MJPEG compression setting:
A higher value implies higher bit rates and higher visual quality. The default setting of the MJPEG quality factor is 35; the setting range is from 1 to 70.

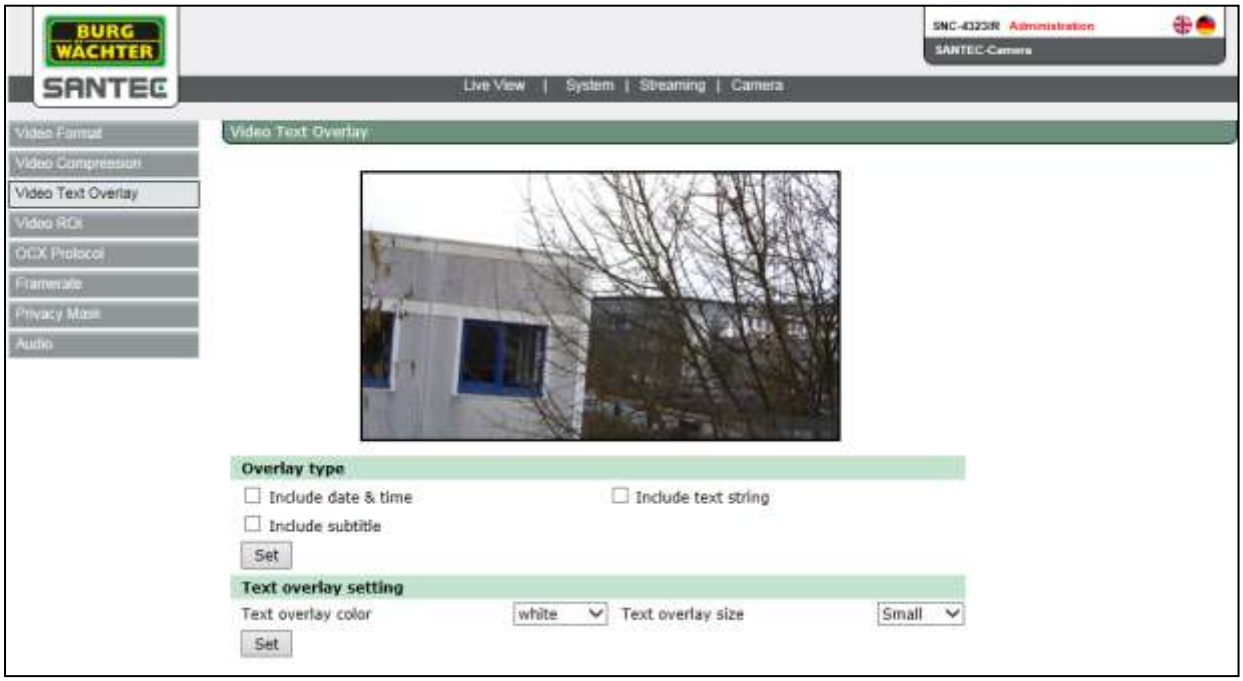
H.264 compression settings:
Here you can set the bit rate for each H.264 stream.

Compression information setting:
Here you can define whether the compression information should be displayed on the start page underneath the live view picture.

CBR mode setting:
The CBR (Constant Bit Rate) mode can be the preferred bit rate mode if the available bandwidth is limited. It is important to pay attention to the image quality when choosing to use CBR mode.
Click on <Save> to confirm the setting.

2.4.3 Video Text Overlay

These settings can be found under this path: **Streaming > Video Text Overlay**



Here you can define which information is to be displayed in the live image: Date & time and/or text. Tick the respective box.
The text can freely be created.
If you grab the text box with the mouse, you can change its position.
Use the colour and size function to adapt the text colour and the text size.

Click on „Set“.

If you now change to the live view page, you will see these displayed information in the video image. If you want to change the text or the displays, please return to the „Video Text Overlay“ page to make the changes there.

2.4.4 Video ROI *(not for SNC-8322I and SNC-8322HO)*

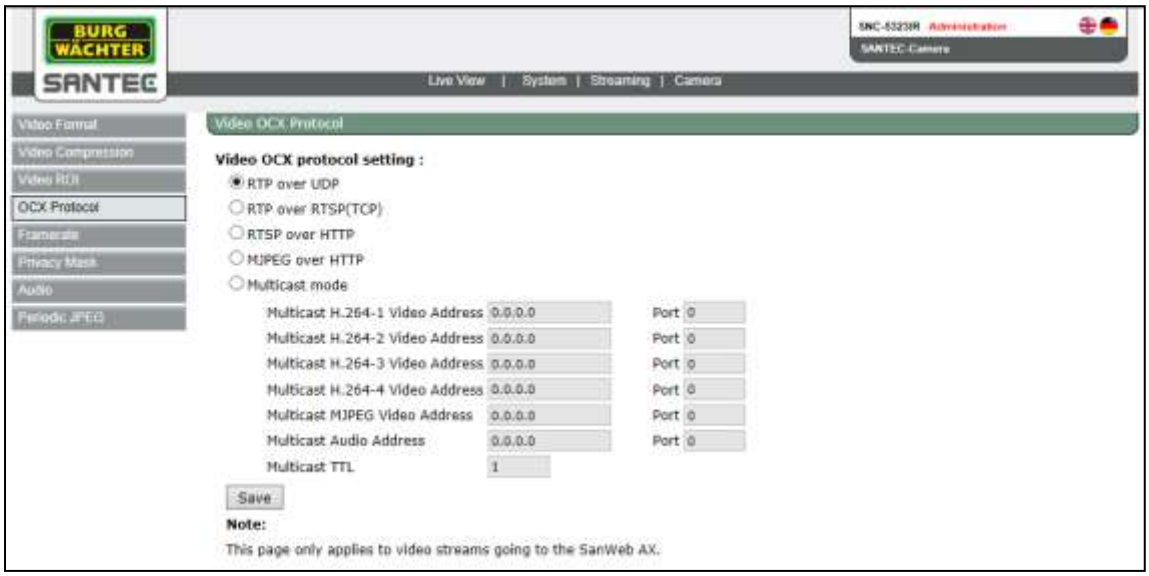
The video ROI settings can be found under this path: **Streaming > Video ROI**

ROI = Region of Interest.

In case of multiple streamings, you can select an area which – instead of the complete picture – is displayed in the selected stream.

2.4.5 Video OCX Protocol

The video OCX protocol settings can be found under this path:
Streaming > Video OCX Protocol



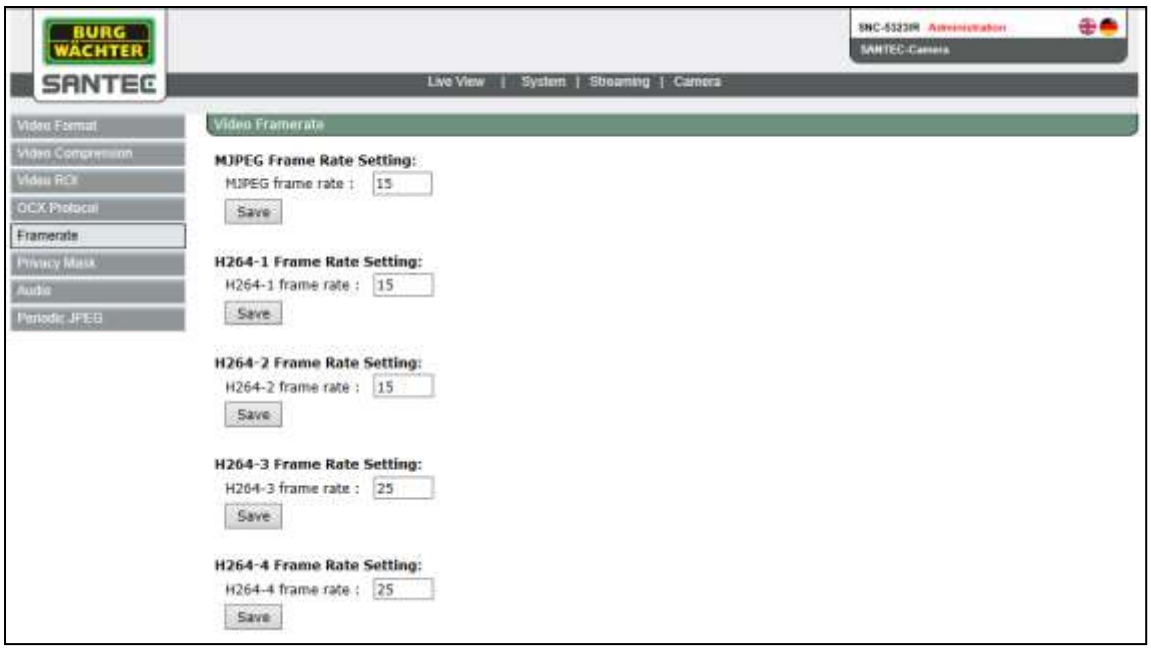
Here you can select the transmission mode for the streaming in the Internet Explorer.

By default, “RTP over UDP” is selected to achieve the lowest possible latency at the video transmission (recommended mode).

If you experience firewall problems:
Select “RTSP over HTTP”. In this case, you only have to forward ports 80 and 554.
This mode, however, is not recommended because this method has a negative influence on the overall performance of the camera.

2.4.6 Video frame rate

The video frame rate setting can be found under this path: **Streaming > Video Frame Rate**



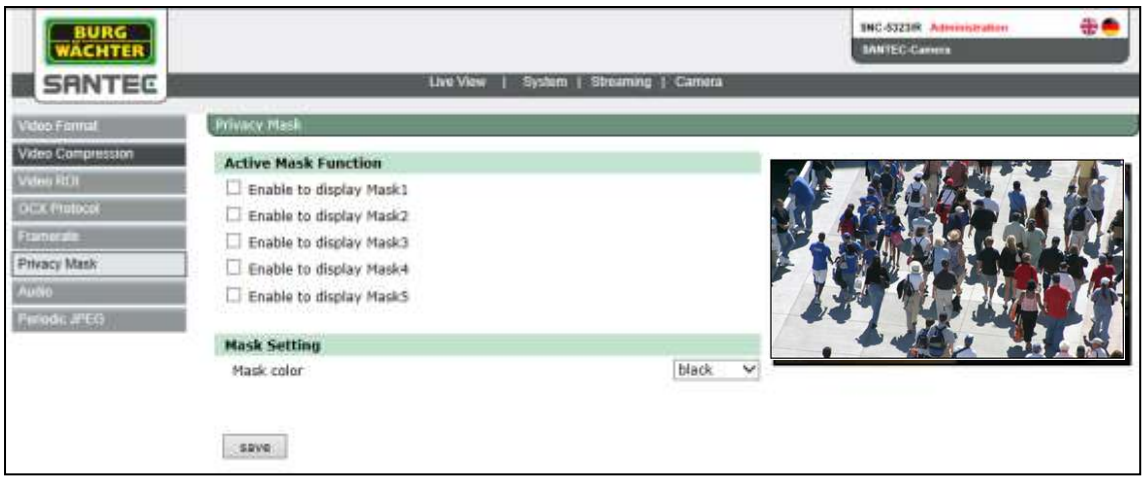
Video frame rate is for setting the frames per second (fps) if necessary.

MJPEG / H.264 frame rate:
The setting for MJPEG / H.264 frame rate can be set from 1-25.
Default is 25 fps.
Click on <Save> to confirm the setting.

Note:
A too low frame rate will lead to flickering videos.

2.4.7 Privacy mask *(not for SNC-8322I and SNC-8322HO)*

The video mask setting can be found under this path: **Streaming > Video mask**



Active mask function:

- Add a mask:
  If you check a privacy mask checkbox, a red frame will come out in the live video pane at the right side. Use the mouse to drag and drop to adjust the mask's size and place it on the target zone.

  Note:
  It is suggested to set the video mask twice as large as the object.

- Delete a mask :
  Unchecking the checkbox of the privacy mask means to delete the selected mask. It will disappear from the live video pane instantly.

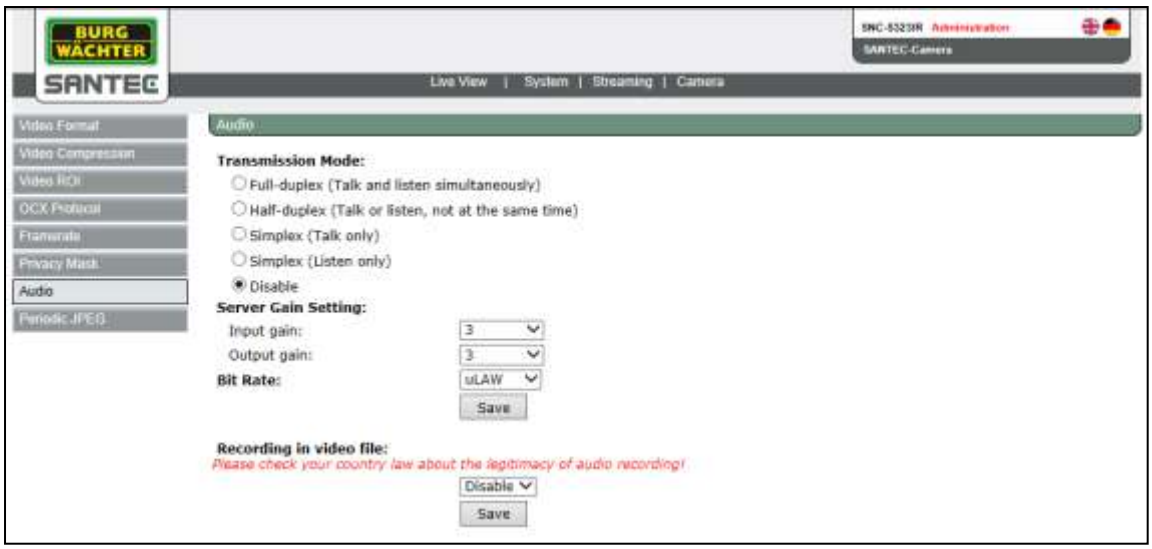
Mask setting:

- Mask color:
  The selections of mask color: Black, white, yellow, red, green, blue, cyan and magenta.

Click on <Save> to confirm the setting.

2.4.8 Audio

The audio mode setting can be found under this path: **Streaming > Audio**



Transmission mode:

- Full duplex (talk and listen simultaneously):
  In full duplex mode, the local and remote sites can communicate with each other simultaneously, i.e. both sites can speak and be heard at the same time.
- Half-duplex (talk or listen, not at the same time):
  In half-duplex mode, the local/remote site can only talk or listen to the other site at a time.
- Simplex (talk only):
  In talk only simplex mode, the local/remote site can only talk to the other site.
- Simplex (listen only):
  In listen only simplex mode, the local/remote site can only listen to the other site.
- Disable:
  Select the item to turn off the audio transmission function.

Server gain setting:
Here you may amplify the audio transmission The audio gain values are adjustable from 1 to 6 (default = 3). The sound will be turned off if the audio gain is set to “Mute”.

Bit rate:
Selectable audio transmission bit rate include:
16 kbps (G.726), 24 kbps (G.726), 32 kbps (G.726), 40 kbps (G.726), uLAW (G.711) and ALAW (G.711).
Both uLAW and ALAW signify 64 kbps but in different compression formats.
Higher bit rates will allow higher audio quality and require bigger bandwidth.

Click on <Save> to confirm the setting.

Important: Legal note

Monitoring, recording and storage of video surveillance data (images, sound), is subject to strict legal regulations. Please respect the Data Privacy Act which applies to your country.

2.5 Camera *(not for SNC-8322I and SNC-8322HO)*

2.5.1 Profile

The profile setting can be found under this path: **Camera -> Profile**

1. Select a profile number:
   - Normal: Standard
   - 1-10: Per selected profile, you can define an individual name
2. If required, enable the box “by schedule” and select a schedule (at least one schedule has to be defined; see chapter 2.3.8). The profile setting also works without setting a schedule.
3. Confirm by ticking the box.

If you have set a profile 1-10, all following camera settings will refer to these profiles, i.e. exposure, white balance, image adjustment, backlight, digital zoom, IR light, WED and noise reduction.

2.5.2 Exposure

The exposure setting can be found under this path: **Camera > Exposure**

The exposure is the amount of light received by the image sensor and is determined by the width of lens diaphragm opening, the amount of exposure by the sensor (shutter speed) and other exposure parameters. With this item, users can define how the auto exposure function works.

Auto mode:

- Gain level:
  The gain level can be set from 1-3.

- Auto iris: Min. shutter speed:
  The minimum shutter speed is 1/1.5 to 1/25 sec.

- Auto shutter: Min shutter speed:
  The minimum shutter speed is 1/1.5 to 1/425 sec.

- Shutter priority:
  The shutter priority can be set from 1/25 to 1/425 sec.

Manual mode:

- Shutter speed:
  The shutter speed range is from 1/10000 to 1/1.5 sec. Users can select a suitable shutter speed according to the environmental illumination.

- Gain:
  The gain level can be set from 1-9.

2.5.3 White balance

The white balance setting can be found under this path: **Camera > White balance**

A camera needs to find reference colour temperature which is a way of measuring the quality of a light source, for calculating all the other colours. The unit for measuring this ratio is in degree Kelvin (K). Users can select one of the white balance control modes according to the operating environment. The following table shows the color temperature of some light sources for reference.

Light sources	Colour temperature in ° K
Cloudy sky	6,000 to 8,000
Noon sun and clear sky	6,500
Household light	2,500 to 3,000
75 watt bulb	2,820
Candle flame	1,200 to 1,500

Auto (Auto White Balance):
The auto white balance mode is suitable for environment with light source having color temperature in the range roughly from 2700 - 7800K.

ATW (Auto Tracking White Balance):
With the auto tracking white balance function, the white balance in a scene will be automatically adjusted when temperature color is changing. The ATW mode is suitable for environment with light sources having color temperature in the range roughly from 2500 - 10000K.

One Push:
The camera executes a white balance once. Enable the One Push option and confirm with a tick. Click on the colour icon , so that the camera starts the white balance once.
The detected white balance value is valid until the next camera operation.

Manual:
In this mode, users can change the white balance value manually. Users can select values between 0 -127 for “RGain/ BGain” item to gain the red/ blue illuminant on the live video pane. Default values: RGain = 57; BGain = 54.

Click on <√> to confirm the new setting.

2.5.4 Picture adjustment

The picture adjustment can be found under this path: **Camera > Picture adjustment**

Brightness: Users can adjust the image's brightness by adjusting the item. Please select from -12 to +13.

Sharpness: Increasing the sharpness level can make the image looked sharper; especially enhance the object's edge. Please select from +0 to +15.

Contrast: Camera image contrast level is adjustable; please select from -6 to +19.

Saturation: Colour saturation level is adjustable; please select from -6 to +19.

Hue: Colour hue level is adjustable; please select from -12 to +13.

2.5.5 IR function *(only for camera models with integrated IR LEDs)*

The IR function setting can be found under this path: **Camera > IR function**

Day/night function:
Thanks to the IR cut filter, the camera is able to produce a clear image even at night or under low light conditions.

- Auto: Automatic day/night switching
- Night: Black-white mode
- Day: Colour mode
- Light sensor:Depending on the incoming light the camera operates in day or night mode.
- Light on: IR LEDs are permanently on.
- Light off: IR LEDs are permanently off.
- Smart: The smart mode improves the black/white stability at night when IR light prevails. If an external IR illuminator is activated and is thus the prevailing light source, the IR cut filter of the camera remains open and prevents the camera from switching into day resp. night mode.

Day/Night Threshold:
Here you can define the threshold to switch between day and night mode.

Switching vom night to day mode

Switching vorm day to night mode

Smart IR:
Smart IR evens out possible overexposure of IR light. Usually, IR light is fixed and illuminates the object either too much or too little. Smart IR evens out this effect by adjusting the IR light intensity automatically. Far and near range are thus always ideally illuminated.

2.5.6 Noise reduction

The noise reduction setting can be found under this path: **Camera > Noise reduction**

The IP camera provides multiple noise reduction options for delivering optimized image quality, especially in extra low-light conditions.

Different level options for 3D noise reduction (3DNR) include low, mid and high. A higher level of 3DNR generates relatively enhanced noise reduction.

The proprietary Smart Picture Quality (SPQ) video processing method can drastically minimize motion blur and reduce noise, especially in low-light environment. The combination of SPQ and 3DNR at different levels further yield exceptional video performance in various conditions.

The noise reduction function is configurable with the following options:
3DNR Low, 3DNR Mid, 3DNR Hi, SPQ, SPQ + 3DNR Low, SPQ + 3DNR Mid to SPQ + 3DNR Hi.

Click on < √ > to confirm the new setting.

2.5.7 Backlight

The backlight compensation function prevents the center object from being too dark in surroundings where excessive light is behind the center object.

2.5.8 Digital zoom

The digital zoom can be disabled or set from 2x to 8x.
Click on < √ > to confirm the new setting.

2.5.9 WDR (Wide Dynamic Range)

The WDR function setting can be found under this path: **Camera > WDR function**

The Wide Dynamic Range (WDR) function is for solving high contrast or changing light issues to enhance the video quality. The WDR is adjustable from low, mid to high. A higher level of WDR represents wider dynamic range, so that the IP camera can catch a greater scale of brightness.
Click on <√ > to confirm the new setting.

2.5.10 TV system

The TV system setting can be found under this path: **Camera > TV system**
Select the video format that matches your TV system (PAL or NTSC).
Click on < √ > to confirm the new setting.

2.6 PTZ *(only for SNC-3322)*

Here you can configure connected devices via RS-485.

2.6.1 Preset

The preset setting can be found under this path: **PTZ > Preset**

Here you can set presets from 1-127.
Note: This function is only available if the pan/tilt control is enabled (see chapter 2.6.3).

2.6.2 Sequence

The sequence setting can be found under this path: **PTZ > Sequence**
Here you can define sequences from 1-8 and their dwell time for presets.
Note: This function is only available if the pan/tilt control is enabled (see chapter 2.6.3).

2.6.3 Pan/Tilt control

The pan/tilt control setting can be found under this path: **PTZ >Pan/tilt control**

If the pan/tilt control is activated, a PTZ control panel is displayed next to the live view picture. Using this control panel, you can zoom and move the picture.

2.7 PTZ *(only for SNC-8322I and SNC-8322HO)*

2.7.1 Profile

The profile setting can be found under this path: **PTZ > Profile**

1. Select a profile number:
   - Normal: Standard
   - 1-10: Per selected profile, you can define an individual name
2. If required, enable the box “by schedule” and select a schedule (at least one schedule has to be defined; see chapter 2.3.8). The profile setting also works without setting a schedule.
3. Confirm by ticking the box.

If you have set a profile 1-10, all following camera settings will refer to these profiles, i.e. exposure, white balance, image adjustment, backlight, digital zoom, IR light, WED and noise reduction.

2.7.2 Preset

The preset setting can be found under this path: **PTZ > Preset**

Preset setting:

- Left-click into the live picture.
  The cursor turns into a red arrow/dot. You can now move the picture to the desired position.
- If required, you can adjust the picture by clicking on the zoom and focus buttons.
- Select a preset number from the drop-down list. The preset numbers are displayed by 10s: Click on „Pre Page“ or „Next Page“ to display the previous or next 10 preset numbers. Overall, 256 preset points can be defined.
- Enter a preset name (max. 15 characters).
- Click on “Set” to save the preset.

Preset go to list:
To move the camera into a specific position, select the desired position from the preset list. The preset numbers are displayed by 10s. Click on „Pre Page“ or „Next Page“ to display the previous or next 10 preset numbers.

2.7.3 Cruise

The cruise setting can be found under this path: **PTZ > Cruise**

Cruise setting:

- Select a cruise path (=tour number) from the drop-down list. Overall, 8 cruises can be defined.
- Left-click into the live picture.
  The cursor turns into a red arrow/dot. You can now move the picture to the desired position.
- If required, you can adjust the picture by clicking on the zoom and focus buttons.
- Click on „Record start: Set“ to start the cruise.
- Click on „Record end: Set“ to end the cruise.

Cruise run list:
To run a specific cruise, select the desired cruise path (= cruise number) from the drop-down list.
To display the cruise as full screen, right-click in the live picture and select “Fullscreen”. By double-clicking in the full screen picture, you return to the regular view.

2.7.4 Auto pan

The auto pan setting can be found under this path: **PTZ > Auto Pan**

Auto pan setting:

- Select an auto pan path (=auto pan number) from the drop-down list. Overall, 4 auto pans can be defined.
- Left-click into the live picture.
  The cursor turns into a red arrow/dot. You can now move the picture to the desired position.
- If required, you can adjust the picture by clicking on the zoom and focus buttons.
- Click on „Start point: Set“ to start the cruise.
- Click on „End point: Set“ to end the cruise.
- Enter the auto pan speed from 0 to 3: 0 = slow; 3 = fast.
- Enter the auto pan direction: left or right.

Auto pan run list:
To run a specific auto pan, select the desired auto pan path (= auto pan number) from the drop-down list.
To display the auto pan as full screen, right-click in the live picture and select “Fullscreen”. By double-clicking in the full screen picture, you return to the regular view.

2.7.5 Sequence

The sequence setting can be found under this path: **PTZ > Sequence**

Sequence setting:

- Click on „Edit“.
- From the sequence drop-down list, select the desired number.
- Select a preset name.
- Enter the dwell time (0-225).
- Enter the speed (0-14).
- By clicking on „Previous“ or on „Next“, you can go to the previous resp. next 10 sequences.
- Click on „Go“.
- Left-click into the live picture.
  The cursor turns into a red arrow/dot. You can now move the picture to the desired position.
- If required, you can adjust the picture by clicking on the zoom and focus buttons.

Sequence run list:
To run a specific sequence, select the desired number.
To display the sequence as full screen, right-click in the live picture and select “Fullscreen”.
By double-clicking in the full screen picture, you return to the regular view.

2.7.6 Home

The home setting can be found under this path: **PTZ > Home**

If the camera has been idle for a specific time or if the user hasn't adjusted any settings recently, the camera automatically goes into a "home" mode.

Home setting:

- Enable or disable the home mode.
- Click on „Set".
- Enter an elapsed time (1-128 minutes) after which the camera goes into the home mode.
- Enter an action type and the respective number (preset, sequence, auto pan, cruise) which the camera should execute when in home mode.

Note:
The home mode function can only be activated if a preset, sequence, auto pan or cruise has previously been defined.

2.7.7 Tilt range

The tilt range setting can be found under this path: **PTZ > Tilt range**

The tilt range can be set from -10° to max. 100°.

Click on „Set“ to save the setting.

2.7.8 Privacy mask

These settings can be found under this path: **PTZ > Privacy mask**

Privacy mask setting:

- Enable or disable the mask setting.
- Transparancy:
  Define whether the privacy mask should be displayed as transparent or not.
- Colour:
  Enter the colour of the privacy mask.
- Mask:
  Assign a number to the respective privacy mask (1-16). Overall, up to 16 privacy masks can be defined.
- Width, height:
  Define the size of the privacy mask.
- Click on „Add“ to add the privacy mask into the live picture.

Mask clearing:
From the drop-down list, select the desired privacy mask and click on „Clear“ to delete it.

2.7.9 Camera exposure

These settings can be found under this path: **PTZ > Camera exposure**

The exposure is the amount of light received by the image sensor and is determined by the width of lens diaphragm opening, the amount of exposure by the sensor (shutter speed) and other exposure parameters. With this item, users can define how the auto exposure function works.

Auto mode: Here you can select the maximum gain (in dB).

- Full automatic min. shutter speed
- Shutter priority
- P-Iris
- Min. shutter speed

Manual mode:

- Shutter:
  Depending on the environmental illumination, you can select a fix shutter speed from 1/10000 to 1 sec.
- Iris (F1.6 bis F28)
- Gain (1-15)

2.7.10 Camera white balance

The white balance setting can be found under this path: **PTZ > Camera WB**

A camera needs to find reference color temperature which is a way of measuring the quality of a light source, for calculating all the other colors. The unit for measuring this ratio is in degree Kelvin (K). Users can select one of the white balance control modes according to the operating environment. The following table shows the color temperature of some light sources for reference.

Light sources	Color temperature in ° K
Cloudy sky	6,000 to 8,000
Noon sun and clear sky	6,500
Household light	2,500 to 3,000
75 watt bulb	2,820
Candle flame	1,200 to 1,500

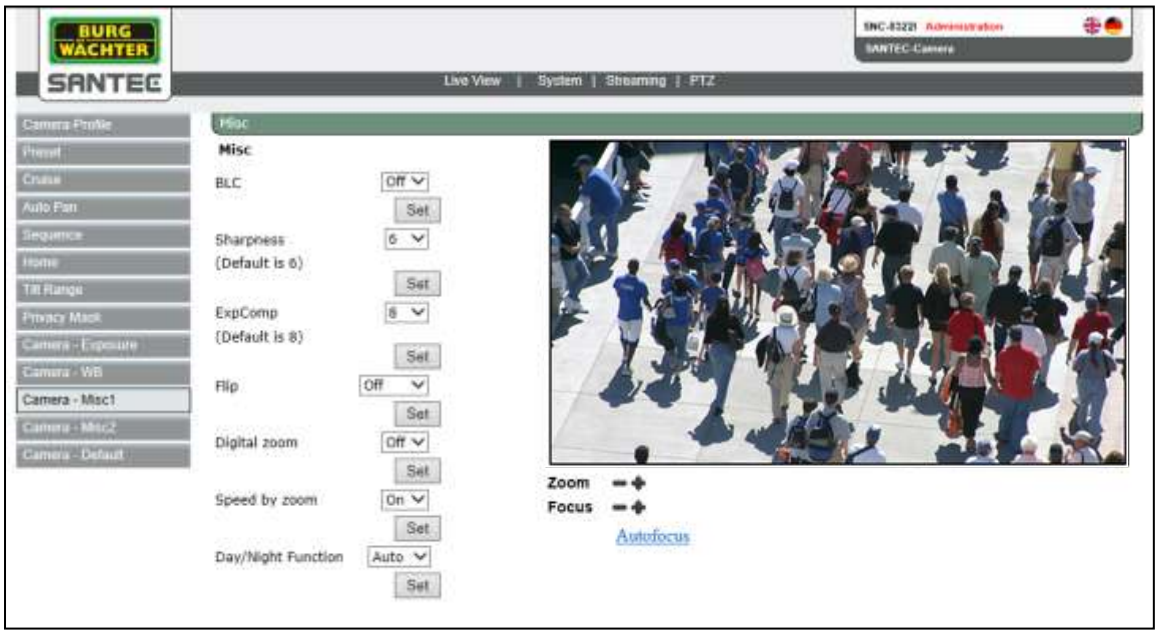
White balance settings:

- Auto:
  The auto white balance mode is suitable for environment with light source having color temperature in the range roughly from 2700 - 7800K.
- Indoor, outdoor:
  Define whether the camera is located indoors or outdoors.
- ATW (Auto Tracking White Balance):
  With the auto tracking white balance function, the white balance in a scene will be automatically adjusted when temperature color is changing. The ATW mode is suitable for environment with light sources having color temperature in the range roughly from 2500 - 10000K.
- OnePush
- Manual:
  In this mode, users can change the white balance value manually. Users can select values between 0 -127 for “RGain/ BGain” item to gain the red/ blue illuminant on the live video pane. Default values: RGain = 57; BGain = 54

Click on „Set“ to save the settings.

2.7.11 Camera misc. 1

This setting can be found under this path: **PTZ > Camera misc. 1**

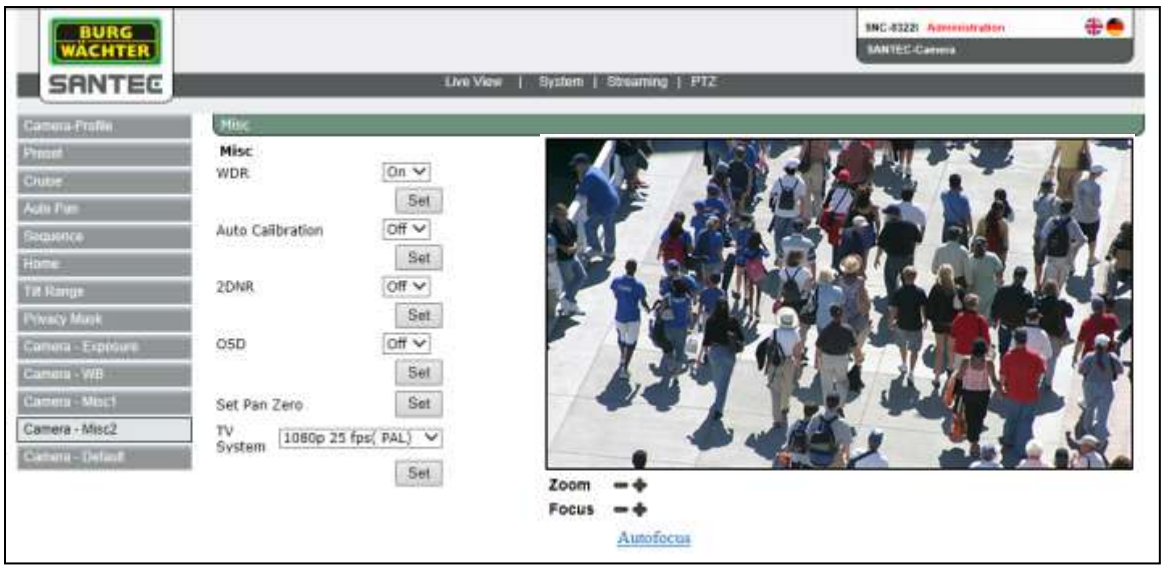


- BLC:
  The backlight compensation (BLC) can be enabled or disabled.
- Sharpness:
  The picture sharpness can be set form 1 to 15.
- Exposure compensation:
  The exposure can be set from 1 to15.
- Flip:
  The picture can be flipped electronically or mechanically.
- Speed by zoom:
  This function can be enabled or disabled. If enabled, the pan/tilt function will decrease at high zoom function (proportional to zoom).
- IRC function:
  Can be enabled or disabled or set to „auto“.

Click on „Set“ to save the settings.

2.7.11 Camera misc. 2

This setting can be found under this path: **PTZ > Camera misc. 2**



- WDR:
  The Wide Dynamic Range (WDR) function is for solving high contrast or changing light issues to enhance the video quality.
  WDR can be enabled or disabled.
- Auto calibration:
  The auto calibration can be enabled or disabled.
- 2DNR:
  The 2DNR function (noise reduction) can be enabled or disabled.
- Set pan zero:
  Click on „Set“ to set a 0°position for panning.
- TV system:
  Select PAL (25 fps) or NTSC (30 fps).

Click on „Set“ to save the settings.

2.7.13 Camera default

This setting can be found under the path: **PTZ > Camera default**

Default:
By restoring the camera settings to factory default, all previously made settings will be lost.

Click on “Set default” to set the camera back to factory default settings.

Appendix: Install UPnP components

For Windows XP:
Please proceed as follows to install UPnP for Windows XP:

1. Go to <Start>, then click on <Control Panel> and double-click on <Add or Remove Programs>.
2. Click on <Software>.
3. Click on <Add/Remove Windows Components>.
4. In the Windows wizard window, click on <Networking Services>> and then on <Details>.
5. Select <UPnP user interface> and confirm with <OK>.
6. Click on <Next>.
7. Click on <Finish> to complete the installation.

For Windows Vista and Windows 7:
Please proceed as follows to install UPnP for Windows Vista and Windows 7:

By default, the windows firewall blocks network discovery (formally called UPnP technology), but you can enable it in the following way:

1. Click on <Start> and then click on <Control Panel>.
2. Click on <Network and Internet> and then on <Network and sharing center>.
3. If the network discovery (UPnP) is off, click on the arrow icon to expand the section.
4. Click on <Turn on network discovery> and then on <Apply>. If prompted for an administration password or a confirmation, please type the password or provide the confirmation.

Your local distributor: